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Global Financial Reporting: Implications for U.S. Academics

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ABSTRACT: This paper identifies challenges and opportunities created by global financial reporting for the education and research activities of U.S. academics. Relating to education, after overviewing the relation between global financial reporting and U.S. GAAP, it offers suggestions for topics to be covered in global financial reporting curricula and clarifies common misunderstandings about the concepts underlying financial reporting. Relating to research, it explains how and why research can provide meaningful input into standard-setting, and identifies questions that can motivate research related to topics on the International Accounting Standards Board's technical agenda and to the globalization of financial reporting.

I. INTRODUCTION

Global financial reporting is rapidly becoming a reality. As home to the largest capital market in the world, the U.S. has an important role to play in global financial reporting. Because of the U.S.'s position in global capital markets, U.S. firms and academics can no longer concern themselves only with the development, application, and implications of U.S. Generally Accepted Accounting Principles (GAAP). The time has come to focus on the development, application, and implications of International Financial Reporting Standards (IFRS). This paper identifies challenges and opportunities created by global financial reporting for the education and research activities of U.S. academics.

On April 24, 2007, the U.S. Securities and Exchange Commission (SEC) surprised the U.S. capital markets when it announced that it would seek public comment on the questions of whether it should accept from non-U.S. registrants financial statements prepared using IFRS without reconciliation of net income and equity book value to U.S. GAAP and, perhaps more strikingly,

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Editor's note: This paper was submitted at the invitation of the Senior Editor, Dan Dhaliwal.

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whether it should accept from U.S. registrants financial statements prepared using IFRS.[1] On July 2, 2007 the SEC issued the proposal for non-U.S. registrants (SEC 2007a) and on August 7, 2007 it issued the concept release relating to U.S. registrants (SEC 2007b). On November 15, 2007, the SEC decided to eliminate the reconciliation requirement for non-U.S. registrants that prepare financial statements using IFRS (SEC 2007c). These SEC actions represent watershed events for global financial reporting.

Although these SEC actions were surprising to some, in many respects they simply represent the next step in the U.S.'s long-term and extensive commitment to global financial reporting. Among many other activities, the U.S. has actively participated in the (1) establishment and deliberations of the International Accounting Standards Board (IASB) and its predecessor, the International Accounting Standards Committee; (2) comprehensive convergence efforts between the U.S. Financial Accounting Standards Board (FASB) and the IASB; (3) strengthening of the International Organization of Securities Commissions, and (4) development of international auditing standards by the International Auditing and Assurance Standards Board. In 2005, the SEC staff published a "roadmap" of the sequential steps necessary before the staff would recommend that the SEC eliminate the reconciliation requirement for non-U.S. firms applying IFRS by 2009 (Nicolaisen 2005). Thus, the recent SEC action regarding non-U.S. registrants was not totally unexpected. The action regarding U.S. registrants was less expected, although it is a natural next step if the reconciliation requirement for non-U.S. registrants is removed. After all, if IFRS-based financial statements are adequate to protect U.S. investors in non-U.S. firms, then why would they not be adequate to protect U.S. investors in U.S. firms?

Why is global financial reporting desirable? Most of those involved in globalization of financial reporting believe, and research overviewed in Section IV supports, that global financial reporting can improve the functioning of global capital markets by providing better information to investors and other users of financial statements. One improvement is decreasing the costs global firms incur in preparing and auditing their financial statements. Global firms that operate in many countries report that it is costly to prepare and audit financial statements using several sets of standards. A second and related improvement is decreasing the costs financial statement users incur in interpreting financial statements issued by firms around the world. The result of truly global financial reporting would be one language of business, which will enhance comparability of accounting information. A third improvement is decreasing the cost of capital for global firms, which is the ultimate goal.

The remainder of this article is organized as follows. Section II overviews the relation between global financial reporting and U.S. GAAP. It explains the mission of the IASB, the approaches the IASB uses to achieve its mission, and the current status of progress toward global financial reporting. It also describes the relationship between the IASB and the FASB and explains how the two boards work together to achieve converged accounting standards.

Section III focuses on the implications of global financial reporting for U.S. educators. First, it offers suggestions for topics to be covered in global financial reporting curricula. It then identifies nine common misunderstandings about the concepts underlying financial reporting and asks educators to help dispel them. Finally, it explains that financial reporting should be taught from a global perspective to prepare students for careers in a global world.

Section IV focuses on opportunities for research relating to global financial reporting issues. First, it explains how and why research can provide meaningful input into standard-setting. Second, it identifies questions that can motivate research related to topics on the IASB's technical agenda. Because the major projects on the IASB's technical agenda are the same as those on the FASB's technical agenda, these motivating questions are not unfamiliar to U.S. researchers. Third, Section IV focuses on research related to the globalization of financial reporting. It begins by highlighting findings from four streams of extant research: international differences in accounting, relative accounting quality across reporting regimes, effects of features of the financial reporting system other than accounting standards, and capital markets effects of globalization of financial reporting. It then identifies questions that can motivate future research. Section V offers concluding remarks.

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[1] "SEC Announces Next Steps Relating to International Financial Reporting Standards" (April 24, 2007). Available at: http://www.sec.gov.

II. GLOBAL FINANCIAL REPORTING AND U.S. GAAP

The mission of the IASB is to develop a single set of high-quality, global accounting standards that are accepted worldwide. As is the case with many other missions, it is stated simply, but is difficult to accomplish. Every word is carefully chosen. "Single set"—the aim is for one set of accounting standards, not more than one. That is, all entities globally should follow the same standards. "High quality"—the aim is not to develop a single set of low-quality standards. "Global" accounting standards—the aim is to develop standards that can be applied and accepted worldwide. Global accounting standards are a necessary condition for global financial reporting, although they are not sufficient. Standards are a necessary condition because they are the basis on which firms prepare financial statements. Without a single set of standards there is no hope that financial reporting will be consistent around the world. Standards are not sufficient because their application depends on other features of the financial reporting system, such as enforcement, litigation, and auditing. Thus, the IASB helps to promote global consistency in application of the standards.

The IASB has a two-pronged approach to achieving its goal of a single set of standards: adoption and convergence. Regarding adoption, at the present time, more than one hundred countries permit or require some or all firms to use IFRS, sometimes with modification, or have announced plans to do so. Figure 1 reveals that this applies to all publicly listed and some non-listed firms in the European Union, Australia, Russia, among other countries. Some countries, such as Canada, have announced a date at which they will require firms to adopt IFRS; in the case of Canada, the date is January 1, 2011.[2] Regarding convergence, the IASB is working closely with countries that prefer to converge their standards with IFRS so that eventually the two sets of standards will be the same. The U.S., Japan, and China are examples of convergence countries.

Currently, the IASB's most active convergence efforts are with the U.S.[3] The IASB and FASB share similar standard-setting perspectives. First, the IASB follows a conceptual framework that is similar—although not identical—to that of the FASB. Second, the IASB strives to develop principles-based standards. Some characterize IFRS as being principles-based and U.S. GAAP as being rules-based. However, the distinction between principles-based standards and rules-based standards is more relative than absolute. Although the FASB generally provides more detailed guidance on application of accounting principles than does the IASB, both IFRS and U.S. GAAP include principles and rules, depending on context (Schipper 2003).

The IASB and FASB work closely together on all major technical projects. In 2002, the two boards issued the "Norwalk Agreement," which stated that the two boards agree to seek common answers to financial reporting questions. Even though it had few details, the Norwalk Agreement

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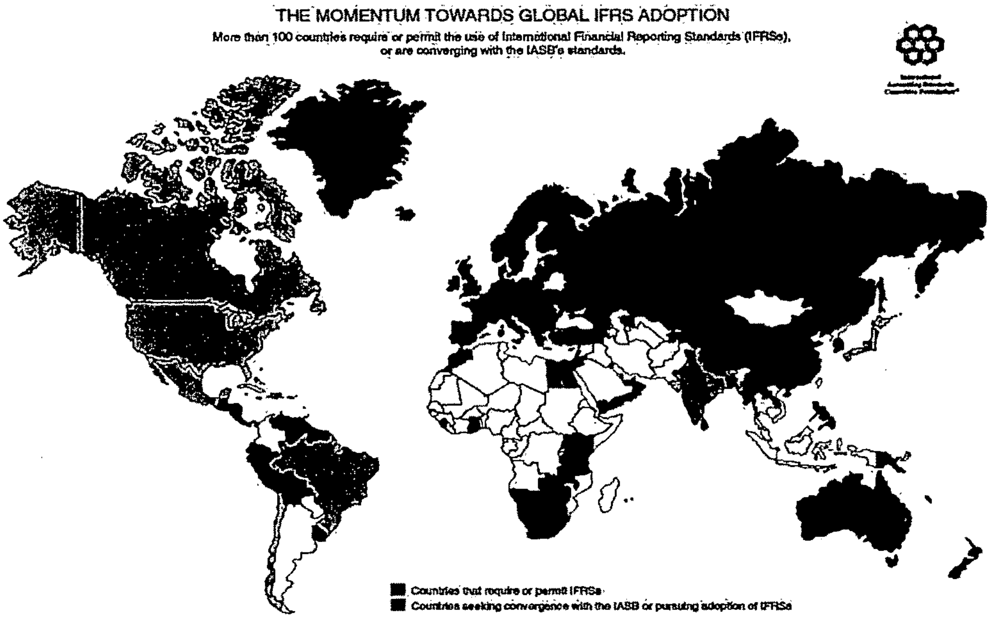
[2] Some countries, such as Australia and perhaps Canada, do not literally adopt IFRS. Instead, they issue domestic standards that are identical to IFRS. Until 2011, Canada is a convergence country, modifying Canadian standards to minimize the effect of the adoption of IFRS in 2011. See http://www.cica.ca, "Transition to International Standards."

[3] See Pacter (2005) for a discussion of the IASB/FASB convergence efforts.

FIGURE 1


THE MOMENTUM TOWARDS GLOBAL IFRS ADOPTION
More than 100 countries require or permit the use of International Financial Reporting Standards (IFRSs), or are converging with the IASB's standards.
■ Countries that require or permit IFRSs
■ Countries seeking convergence with the IASB or pursuing adoption of IFRSs

Source: International Accounting Standards Board (2007).

was a first step in the IASB/FASB convergence relationship. Since then the relationship has evolved and strengthened. At the present time, most major agenda projects are joint projects. In a joint project, the same staff work on the project for both boards and the boards analyze the issues in the same calendar time, using the same staff papers. The ultimate goal of the IASB/FASB convergence efforts is for the standards issued by the two boards to be identical. This is because the boards believe that even if they arrive at the same technical answer, those reading the standards would presume the boards meant something different if they do not use the same words in the standards. The recently issued business combinations standards, IFRS 3 (revised) and SFAS No. 141(R) (IASB 2007; FASB 2007) are the first jointly issued standards that are word-for-word the same, except for a few legacy differences.

There are several challenges to achieving convergence of IFRS and U.S. GAAP. One challenge is the need for each board to maintain its existing literature. Because many pre-existing standards are not identical, maintenance of these "legacy" standards can result in additional divergence, rather than convergence. A second challenge is presented by different political pressures faced by each board. Sometimes the pressures offset each other and sometimes they compound each other. For example, the IASB's issuance of IFRS 2 (IASB 2004), which requires recognition of expenses related to share-based payments, arguably offset some of the political pressure on the FASB to refrain from issuing SFAS No. 123R (FASB 2004), which included the same requirement. In contrast, pressure to abandon the proposal to base measurement in a business combination on the fair value of the acquired entity was focused on both boards, thereby compounding its effects. A third challenge is dealing with different priorities. Sometimes one board perceives a need to address an issue at a particular time and the other board does not. If the first board tackles the issue and the second does not, convergence could suffer. For example, the FASB issued SFAS No. 157 (FASB 2006) on fair value measurement before the IASB issued a similar standard and, thus, it is possible that there are differences in how fair values are determined in the two sets of standards. A fourth challenge relates to different styles of standards, particularly different levels of detailed guidance. FASB standards typically include more detailed rules and specific guidance, whereas IASB standards typically rely on more judgment in applying the principles in the standard. The existence of challenges to convergence is a key reason why some believe that pursuing convergence is not the most efficient and effective way to achieve a single set of standards.[4] These persons believe that the most efficient and effective way to achieve a single set of global standards is for the U.S. to adopt IFRS in their entirety.

III. EDUCATING STUDENTS FOR GLOBAL FINANCIAL REPORTING

U.S. educators have a key role to play in global financial reporting. Today's students are the future of our profession. We need to educate them for the world they will live in, not the world we lived in. Their world is global. No single country can stand alone in such a world, not even the U.S.

One implication of this is that educators need to change how they teach global financial reporting. Typically, international financial reporting has been taught as a separate course. Such courses often focus on cross-country differences in perspectives and cross-country differences in financial reporting. This is appropriate when financial reporting around the world is done in many different ways. Such cross-country tours of financial reporting can be instructive, particularly to enhance our understanding of how accounting systems evolve. However, such cross-country tours of financial reporting are rapidly becoming obsolete. As noted above, more than 100 countries permit or require some or all firms to use IFRS, sometimes with modification, or have announced plans to do so, and this number continues to rise at a pace more rapid than most expected.[5]

Other implications of the need to educate students for global financial reporting include increasing the focus on teaching them the concepts that underlie financial reporting and how to make judgments consistent with those concepts, and helping to dispel common misunderstandings about the concepts that impede a common understanding of financial reporting.

Teach Concepts and How to Make Judgments

Financial reporting education should begin with the concepts in the framework.[6] The framework specifies the concepts that underlie financial reporting; it is the foundation on which financial reporting standards are built. Although the conceptual framework changes over time, it does so much less frequently than standards do. Thus, students who understand the conceptual framework will have knowledge that is more enduring. The principles in standards specify how the framework concepts apply to particular topical issues. The rules in standards complement and operationalize the principles by specifying what an entity must do to satisfy those principles. Rules reflect not only the concepts and principles, but also practical considerations and cost/benefit trade-offs. With this perspective, students will not be surprised if for any particular topic, different standard-setters at different times specify different rules to operationalize the same concepts and principles. Students may fail to understand this important point if accounting education focuses only on the rules. Doing so also runs the risk of students' knowledge becoming obsolete in a relatively short time.

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[4] As quoted in "U.S. Regulator: Adopt Global Accounting Standards" (Reuters, October 9, 2007), SEC Commissioner Paul Atkins shares this view.

[5] As in the U.S., some countries, e.g., some European countries, permit but do not require non-listed entities to use IFRS, whereas other countries, e.g., Australia, require all entities to use IFRS. Also as in the U.S., some countries do not use IFRS for regulatory purposes, such as for statutory filings and calculating income taxes and distributable dividends. Many countries use domestic accounting standards for these purposes. Some countries modify IFRS for use in their country; U.S. accounting students should learn whether a particular country applies a modified version of IFRS and the nature of the modification(s). See http://www.iasplus.com for a summary of the options and requirements relating to the use of IFRS around the world.

[6] The IASB's conceptual framework is specified in IASB (2001); the FASB's conceptual framework is specified in Statements of Financial Accounting Concepts (SFAC) Nos. 1, 2, 5, 6, and 7 (FASB 1978, 1980, 1984, 1985, 2000). As noted above, the two frameworks are largely the same. The boards presently are conducting a joint project aimed at converging, updating, and completing the boards' conceptual frameworks. Also, see footnote 14.

As an example, consider accounting for business combinations as specified in the converged IFRS 3 (revised; IASB 2007) and SFAS No. 141(R) (FASB 2007). One of the principles in these standards is that for each business combination, one of the combining entities shall be identified as the acquirer. The acquirer is the entity that obtains control of the acquiree. This principle follows from the conceptual framework, which indicates that the entity's statement of financial position should reflect the economic resources it controls and the claims to those resources. If two entities combine, then the controlling entity should recognize the assets acquired and liabilities assumed in connection with the acquisition. The rules in the standards go on to specify how to determine whether one entity controls another. IFRS 3 specifies that this determination is a matter of judgment based on the indicators of control in International Accounting Standard (IAS) No. 27; SFAS No. 141(R) (IASB 2006b; FASB 2007) also includes these indicators. An alternative rule could be that control exists if one entity owns more than 50 percent of the voting shares of the other entity. This is how many interpreted the notion of control in the prior business combination standards. However, if one understands the concepts and principles in the standard, as well as the rules, then it is clear that both rules operationalize the notion of control. Because both rules derive from the same principle, neither is wrong, and it should not be surprising when the IASB and FASB converge on one alternative.

Focusing on the framework and explaining that the same concepts and principles can lead to different implementation rules leads naturally to viewing financial reporting as global. At the conceptual level, the differences between IFRS and U.S. GAAP are few. There are differences in principle—for example, asset revaluations. However, the main differences between IFRS and U.S. GAAP relate to rules—for example in measuring financial instruments, particularly related to hedge accounting, interest capitalization, and impairment. Students need to know about these differences to understand today's financial statements. However, these differences are likely to be short-lived because either U.S. GAAP will be converged with IFRS or U.S. firms will adopt IFRS.

Financial reporting educators also need to ensure their students learn the foundational theories that underlie financial reporting. These theories include micro- and macro-economics, finance, information economics, the role and effects of incentives, rational expectations, and portfolio pricing. The conceptual framework states that the objective of financial reporting is to provide information useful for making economic decisions (IASB 2001, para. 12). Thus, it is clear that understanding economic concepts, including those relating to information for investors and creditors, is fundamental to understanding financial reporting. These foundational theories identify what information capital providers need and the effect of financial reporting information on their decisions. This understanding will become even more important as future standard-setters more comprehensively implement the conceptual framework in standards. Students need to understand that financial reporting is not about bookkeeping—it is about providing information to outside providers of capital.

Accounting students also need to learn valuation theory and how to audit estimates of asset and liability values. Many financial statement amounts are currently stated at an estimate of some form of current value, e.g., financial instruments, assets acquired and liabilities assumed in a business combination, impaired assets, and some nonfinancial liabilities. Although there is considerable debate, topic by topic, about whether fair value should be selected as the measurement basis for particular assets and liabilities (see Section IV), the IASB and FASB consider fair value as a potential measurement basis in almost every measurement decision they make. The boards do so because they believe that fair value measures meet the objective of financial reporting and the qualitative characteristics of financial reporting information as specified in the conceptual framework. Thus, financial reporting educators who do not teach valuation concepts and techniques as a key part of financial reporting education are doing their students a disservice.

Regarding the qualitative characteristics, as Barth (2007) explains, fair values are relevant, can be faithful representations of assets and liabilities, have predictive value, and are timely, neutral, and comparable. Fair values are relevant because they reflect present conditions relating to economic resources and obligations, which are the conditions under which financial statement users will make decisions.[7] They have predictive value because they help predict future cash flows, which are of interest to investors in valuing equity.[8] Fair values can be faithful representations of assets and liabilities because they reflect risk and probability-weighted assessments of expected future inflows and outflows. Fair values are neutral because they are unbiased. They are timely because they reflect changes in economic conditions when those conditions change.[9] They are comparable because they depend only on the characteristics of the asset or liability being measured—not on the characteristics of the entity holding the asset or liability or when it was acquired. Fair values also enhance consistency, which is a dimension of comparability, because they reflect the same type of information in every period.[10]

Educators also need to teach accounting students how to make judgments. Despite the appearance of precision in financial statements, students must understand that financial reporting is replete with judgments. Students are often surprised that in many situations there is no single correct answer. With the expansion of principles-based standards the number of such situations is likely to increase. However, judgment is often required to apply what seemingly are clear and precise rules. Understanding the conceptual framework will enable students to make more informed financial reporting judgments because they will understand what financial reporting is trying to accomplish and how. Another good source of material for helping students to learn how to make judgments is the Basis for Conclusions on each standard. The Basis for Conclusions explains how the standard-setter thought through the issues, applied the conceptual framework, weighed the pros and cons of available alternatives, and reached the decisions in the standard. Also, disclosures required by IAS 1 (IASB 2005a, paras. 113 and 116) of the judgments management has made in applying accounting policies and of the key assumptions relating to estimation uncertainty that have a significant risk of causing a material change to the carrying amounts of assets and liabilities also can provide insights into the nature and extent of judgments that affect financial statements.

Failure to teach students about the crucial role of judgment in financial reporting has a potentially insidious effect on the practice of accounting. By simply teaching students existing rules and bookkeeping, educators increase the risk of attracting the wrong people to the profession.

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[7] See Barth et al. (2001), Barth (2006b), and Landsman (2006,2007) for summaries of empirical research relating to the value relevance of fair values.

[8] See, e.g., Barth et al. (1995) and Aboody et al. (1999).

[9] See, e.g., Barth et al. (1996), Barth et al. (1998), and Aboody et al. (1999).

[10] For more discussion, see IASB (2005b) and Barth (2006a).

The accounting profession needs persons who are well grounded in economic concepts and who want to make well-founded professional judgments. Those persons whose acquired skills and interests are limited to the rote recording of past transaction amounts will not be able to well serve the needs of financial statement users and, thus, the accounting profession.

Dispel Common Misunderstandings

My and other standard-setters' interactions with educators and others reveal that there are several misunderstandings about the concepts in the frameworks of the IASB and FASB and their implications for financial reporting.[11] These misunderstandings likely have arisen largely because the evolution of financial reporting over the last 20 or 30 years has been ignored by many accountants, including educators.[12] Some educators also seem to have lost touch with accounting theory as curricula have become more specialized and transaction-driven. Educators need to help dispel these common misunderstandings by investing the time necessary to read, understand, and present the concepts in the framework as an explicit and fundamental part of the accounting curriculum. Presently, many accounting educators allocate insufficient time to the conceptual framework. This leaves students to infer accounting concepts from the provisions in accounting standards, which can reflect practical considerations in addition to concepts.

First, there is no "matching principle." That is, matching is not an end in itself and matching is not an acceptable justification for asset or liability recognition or measurement. The conceptual framework explains that matching involves the simultaneous or combined recognition of revenues and expenses that result directly and jointly from the same transactions or other events (FASB 1985, para. 146; IASB 2001, para. 95). Matching will be an outcome of applying standards if the standards require accounting information that meets the qualitative characteristics and other criteria in the conceptual framework. Matched economic positions will naturally result in matched accounting outcomes. However, the application of a matching concept in the conceptual framework does not allow the recognition of items in the statement of financial position that do not meet the definition of assets or liabilities (IASB 2001, para. 95).[13] Thus, there would be no justification for deferring expense recognition for an expenditure that provides no future economic benefit or for deferring income recognition for a cash inflow that will not result in a future economic sacrifice.

Second, few financial statement amounts are stated at historical cost. Assets and liabilities are typically initially measured at the value established by an exchange, which is their cost. But, some type of remeasurement is pervasive. The only amounts in financial statements today that are always historical costs are those for cash and land in the transaction currency. Essentially all other amounts reflect changes in time, events, or circumstances since the transaction date. Amounts for short-term assets and liabilities, e.g., inventory, receivables, and accounts payable, are historical costs if they have not been impaired. However, once an entity recognizes an impairment of inventory or an allowance for uncollectible accounts receivable, the amounts are no longer historical costs. Also, entities depreciate or amortize long-term assets and revalue them or write them down when they are impaired, and amortize issue premium or discount on long-term debt. They also remeasure many financial instruments at fair value. Impaired, amortized, revalued, or otherwise remeasured amounts are not historical costs. Thus, framing the measurement debate in financial reporting as historical cost versus fair value misleads and obfuscates the issues.

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[11] See also Barth (2007) for a discussion of some of these misunderstandings in the context of measurement issues.

[12] The FASB issued SFAC No. 1 in 1978 and SFAC No. 7 in 2000. The IASB first issued its conceptual framework, which was based on the conceptual frameworks of other standard-setters, including the FASB, in 1989.

[13] Similarly, SFAC No. 5 (FASB 1984, para. 86) explains that the simultaneous recognition of income and expenses, commonly referred to as matching, is to reflect the consumption of economic benefits.

Third, conservatism is not a qualitative characteristic of accounting information. Rather, the conceptual framework specifies that accounting information should be unbiased. Freedom from bias is an essential characteristic of reliability and of neutrality (IASB 2001, paras. 31 and 36). Prudence is a qualitative characteristic in the conceptual framework. However, the framework explains that prudence is the inclusion of a degree of caution in the exercise of the judgments needed in making the estimates required under conditions of uncertainty, so that assets or income are not overstated and liabilities or expenses are not understated. The framework also explains that the exercise of prudence does not allow the deliberate understatement of assets or income, or the deliberate overstatement of liabilities or expenses. This is because if it did, the financial statements would not be neutral and, therefore, not have the quality of reliability. There is a sizable body of research that investigates the why, when, and how relating to the empirical regularity that firms' financial statements exhibit a conservative bias (see, e.g., Watts 2003a, 2003b). However, that bias is the result of the application of accounting standards that have not yet been updated to be consistent with the framework, application of other concepts in the framework, and exercise of management discretion in estimating accounting amounts.[14] Conservative bias is not the result of attempts to achieve an objective of conservatism in the framework.

Fourth, reliability is not precision or verifiability. The conceptual framework states that "information has the quality of reliability when it is free from material error and bias and can be depended upon by users to represent faithfully that which it either purports to represent or could reasonably be expected to represent" (IASB 2001, para. 31). Thus, reliability turns on faithful representation, not precision. A precise amount is not necessarily a faithful representation of the real-world economic phenomenon it purports to represent. For example, a share-based payment may be precisely measured at its grant date intrinsic value of zero, but zero is not a faithful representation of share-based payment made in exchange for the employee services. Also, an inventory amount based on cost accumulations and allocations and flow assumptions may be precisely calculated, but is not necessarily a faithful representation of the cost of the inventory. It faithfully represents the calculation, but not a real-world economic phenomenon. In large part because of this common misunderstanding, the discussion paper of the first two chapters of the joint IASB/FASB revised conceptual framework, the boards replaced the term reliability with the term faithful representation (see IASB 2006a, paras. BC2.26–BC2.28).[15] Some also equate reliability with verifiability. In response to comments letters on the discussion paper, the boards have tentatively decided to identify verifiability as an enhancing qualitative characteristic—that is, a characteristic that enhances relevant and faithfully represented information, not an essential element of relevance or faithful representation.

Fifth, the income statement has not become less important than the statement of financial position. Some believe it has because the conceptual framework definitions of financial statement elements are anchored in the asset definition. Income and expenses are defined in terms of changes in assets and liabilities. However, this focus on assets and liabilities—the elements in the statement of financial position—is not because they are more important than income and expenses. Rather, it is because standard-setters have not been able to identify a conceptually consistent and operational way of defining and measuring income and expenses, and thus profit or loss, without reference to assets and liabilities. This approach also is consistent with the concept of economic income being the change in wealth during the period (Hicks 1946).

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[14] The conceptual framework notes that there could be conflicts between the framework and a standard. It also notes that because the IASB will be guided by the framework in the development of future standards and in its review of existing standards, the number of conflicts will diminish through time (IASB 2001, para. 3).

[15] The discussion paper explains that the goals of the joint project are to converge the conceptual frameworks, to update and refine the existing concepts to reflect changes in markets, business practices, and the economic environment in the two or more decades since the concepts were developed, and to improve some parts of the existing frameworks, such as recognition and measurement, as well as to fill some gaps in the frameworks (IASB 2006a, paras. P3–P6). The joint project is not intended to be a fundamental reconsideration of the existing conceptual frameworks. Thus, this paper contains references to the discussion paper when it states more clearly concepts in the existing frameworks.

Sixth, financial reporting standards are not aimed at providing information for parties to the entity's contracts who can demand from the entity the information they need to make their decisions. For example, many debt contracts specify supplemental reports that the entity must provide to the debtholders and specify how to determine the accounting-based amounts on which debt covenants are based. The framework makes clear that outside providers of capital who do not have the power to demand the information that they need are the primary users of general purpose financial reports (IASB 2001, para. 6). This is not to say that contracting parties with such power, including present debtholders, do not find financial reports to be useful—they likely do. However, the discussion paper of the first two chapters of the joint IASB/FASB revised conceptual framework confirms that the information needs of such parties are not the primary concern of financial reporting as envisioned by the conceptual framework. Financial reporting as envisioned by the conceptual framework is aimed at meeting the information needs of capital providers who are not in a position to demand from the entity the information they need, including potential and some present debtholders, and, thus, who rely on financial reporting for that information (IASB 2006a, para. OB11).

Seventh, principles-based standards are not necessarily less rigorous than rules-based standards. The extent to which one type of standard is more or less rigorous than another is an open question. Some believe that without strict rules principles-based standards permit more flexibility for management to exercise opportunistic discretion, and others believe that principles are tougher to circumvent than precise rules, which are more amenable to transaction structuring (e.g., Breeden 1994; FASB 2002; Nelson et al. 2002), and that principles-based standards result in higher quality accounting amounts (Webster and Thornton 2004). Also, the extent to which standards are principles-based or rules-based is a matter of degree—these terms do not classify two distinct types of standards. The FASB's standards, which are often characterized as rules-based are based on the principles in the conceptual framework. The IASB's standards, which are often characterized as principles-based, contain rules. See Schipper (2003) for a comprehensive discussion of the principles- versus rules-based standards debate.

Eighth, rules-based standards do not necessarily lead to enhanced comparability. The conceptual framework discussion paper explains that "comparability is the quality of information that enables users to identify similarities in and differences between two sets of economic phenomena" (IASB 2006a, para. QC35). That is, comparability means that like things should look alike and different things should look different. The discussion paper notes that comparability has been confused with uniformity (see also Zeff 2007). Using the example of a requirement for all entities to use the same assumptions on economic factors, such as the expected future dividend rate on their shares, as inputs to a valuation model, the paper makes the point that an overemphasis on uniformity can make unlike things look alike (IASB 2006a, paras. QC36–Q37), which is not comparability. In addition, rules cannot cover all circumstances and often lead to exceptions, which also impair comparability.

Ninth, items are not initially recognized in other comprehensive income (OCI) because they have particular characteristics. Although it is the case that most OCI items relate to value changes or increase earnings volatility, it is not the case that all value changes or items that increase earnings volatility are initially recognized in OCI. For example, all derivatives are recognized at fair value, regardless of whether they are part of an economic hedging strategy. Also, increases in asset value are not recognized, even though other elements of income and expense likely are affected by the same underlying economic phenomena that resulted in the increased value. Thus, creating explanations that apply to only a subgroup of financial statement items is not helpful in explaining financial reporting more broadly.

IV. OPPORTUNITIES FOR RESEARCH

There is a longstanding debate in academia as to whether and how academic research can provide meaningful input into standard-setting (Gonedes and Dopuch 1974; Barth et al. 2001; Holthausen and Watts 2001). Some believe research cannot be relevant to standard-setting issues because accounting standards are public goods and only standard-setters, as regulators, can make the necessary social welfare trade-offs. Thus, any particular research study cannot determine what the requirements of any particular standard should be. Others believe that despite standard-setting's regulatory role, research can provide insights into standard-setting issues by operationalizing the criteria the standard-setters establish for deciding among alternatives when developing standards, such as relevance and reliability or faithful representation. Because these criteria are specified in the conceptual frameworks, researchers need not specify the unspecified objective function of standard-setters.

My experience indicates that academic research provides valuable input into standard-setting debates. The IASB staff often seeks to learn what research reveals about vexing agenda topics. Although staff members usually are not trained in research, they can understand the issues addressed in the papers and the findings. They look to those trained in research, including academic board members, to help them evaluate the inferences from the research. Having the staff include research findings in their analyses of board agenda topics means that research is considered in board debates of staff recommendations.

Research is valuable to standard-setters for several reasons. First, the concepts underlying financial reporting are familiar to researchers. As noted above, the conceptual framework is based on economics and the information needs of outside providers of capital, which is consistent with the basis for much financial reporting research. Thus, research can help link financial reporting issues to the conceptual framework and thus, in turn, to their economics. For example, valuation research can help link issues to the framework because valuation research focuses on share prices or returns, which are the outcomes of investors' economic decisions. Thus, research aimed at understanding the relation between accounting amounts and share prices and returns that is based on economic theory can help link standard-setting issues associated with the accounting amounts to the objective of financial reporting and the framework criteria of relevance and faithful representation (see Barth [2006b] for further discussion). Second, and relatedly, research can help standard-setters identify the underlying question they should be addressing, help structure their thinking about the question, and provide evidence on the question. Third, standard-setters actively seek input from all constituents on all aspects of issues they consider. However, unlike virtually all other constituents, academics have no incentives to obtain any particular outcome of the standard-setting process. Thus, research can provide an unbiased view to standard-setters.[16] Standard-setters can benefit both from the analyses and findings in individual studies and from syntheses and analyses of extant research.

This section identifies some questions of interest to standard-setters than can motivate academic research. It is easier to articulate these motivating questions—i.e., the questions stated in standard-setting terms—than it is to develop research questions that academics can, and find interesting to, answer and research designs to answer them (Barth 2006b). Because developing research questions and research designs to address these motivating questions requires sometimes considerable researcher effort and creativity, doing so is beyond the scope of this article. This is a task for researchers interested in addressing these topics.

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[16] See Barth (2006b) for further discussion of the relation between academic research and standard-setting issues.

Technical Agenda Topics

One way research can contribute to global financial reporting is by addressing issues related to the IASB's technical agenda. Topics on the technical agenda include, among others, revenue recognition and measurement, financial statement presentation, leases, fair value measurement, insurance contracts, consolidations, nonfinancial liabilities, liabilities and equity, and the conceptual framework. These topics provide ample opportunity for research. Because these topics also are on the FASB's agenda, the questions identified in this section are not unfamiliar to U.S. academics. In fact, for some topics there already exists a large body of related research—too large to review here.[17] Yet, there are many open questions. Because global financial reporting standards are designed to be applicable in all countries, the answers to these questions should be globally applicable. However, there may be circumstances in particular countries or types of countries that alter the answers somewhat or reveal additional insights into the answers that the IASB would need to consider when developing global standards.

Standard-setters think in terms of agenda projects, but researchers often focus on the issues that arise in many projects, i.e., cross-cutting issues. These cross-cutting issues include, e.g., determining whether fair value should be selected as the measurement basis, the relative importance of relevance and faithful representation, how to deal with uncertainty and risk, whether recognition versus disclosure matters, how incentives of and judgments by managers affect accounting amounts, how to distinguish liabilities and equity, user needs, and the costs and benefits associated with a standard.

Consider the cross-cutting issue of whether to use fair value as the measurement basis. The question of whether to use fair value arises in revenue, leases, insurance contracts, nonfinancial liabilities, liabilities and equity, and the conceptual framework. Fair value also is prevalent in the recently revised business combinations standards, IFRS 3 and SFAS No. 141(R) (IASB 2007; FASB 2007), and the boards' long-term project on financial instruments. There are many open questions relating to using fair value as the measurement basis, which include the following. Perhaps the most prevalent question that standard-setters struggle with is can we obtain faithful representations of fair values, or at least as faithful as we can obtain of other measurement bases currently used in financial statements? This is because, as noted in Section III, the boards believe that fair value measures meet the objective of financial reporting and the qualitative characteristics of financial reporting information as specified in the conceptual framework. However, they are unsure of whether we can obtain faithful representations of fair value in all circumstances. The question then becomes if not, then in which circumstances and why? Is it more difficult to do so in countries with emerging economies than it is in the U.S.? If so, why? The boards also struggle with the question of is fair value the appropriate measurement basis to use? If so, then is it appropriate for all assets and liabilities? Some argue, for example, that operating assets should not be measured at fair value, but financial assets should be. Is there validity to this argument? If so, why? How does the argument relate to the criteria in the conceptual framework? The current and potentially increasing use of fair value raises the question of what information do investors need about fair value? SFAS No. 157 (FASB 2006) requires additional disclosures about fair value. Do these disclosures serve investors needs?

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[17] See, e.g., Barth et al. (2001) for a review of some of this literature.

There are many other questions that arise in the context of fair value. For example, some argue that fair values are appropriate measures for disclosures, but not recognized amounts. Does recognition or disclosure matter? Others express concerns about the likely increased earnings volatility associated with more use of fair value. Are these concerns legitimate? What causes the increase in volatility? Is it reflective of firms' economic volatility or is it volatility introduced by accountants (Barth 2004)? Fair values must be estimated in many circumstances and because of that, some are concerned that there is too much scope for opportunistic management discretion in determining the amounts. What are the likely effects of management discretion in estimating fair values? Is there reason to believe these effects are greater for fair value estimates than for other estimates currently recognized in financial statements? How will use of more fair values affect investor or management behavior? What are the implications of incorporating more expectations about the future in financial statements today? In particular, what does profit or loss mean when most, or all, recognized assets and liabilities are measured at fair value? Is this measure of profit or loss one that can help investors, in conjunction with other financial statement information, to make their investment decisions?

In the revenue project, the boards presently are discussing two models for measuring revenue. Both models focus on the contract between the entity and its customer and are based on an asset and liability approach, which is consistent with the conceptual framework. Neither model includes additional criteria such as completion of the earnings process and realizability. Including such additional criteria deviates from a direct application of the conceptual framework and requires specifying the criteria, which leads to including rules. The models differ primarily in how they measure the liability for the entity's performance obligation to its customer. One model would measure the liability at fair value and the other would measure it at an allocated amount of the customer consideration. The fair value model would take a market participant view and could result in recognizing revenue at contract inception, associated with the activity of obtaining the customer. The allocated customer consideration model would take a contract specification view and only would recognize revenue when the contract specifies a deliverable. The key questions in the revenue project are when should revenue be recognized and how should it be measured?

In the financial statement presentation project, the questions the boards are addressing include the following, among others. What should the income statement look like? What should the statement of financial position look like? The statement of cash flows? Should we classify assets and liabilities as short term and long term? Should we classify line items on all of the financial statements as operating, investing, and financing? If so, how should we define these categories? Does the direct method cash flow statement provide more useful information? What criteria should we use in determining the level of disaggregation of financial statement line items? What information do investors need about recognized amounts? All of these questions need to be assessed in the context of the conceptual framework, particularly the objective of financial reporting to provide information that is helpful to investors and other capital providers in making their economic decisions.

In the leasing project, the boards are considering an asset and liability approach to recognizing rights and obligations arising from a lease contract. Key questions the boards will address are which rights and obligations should be recognized and when? Should some rights or obligations be combined and treated as a single asset or liability or should each be recognized separately? For example, should we specify when a set of rights and obligations is equivalent to ownership of the entire leased asset? Do lease agreements differ around the world in a way that would affect the answer? Another key question is how to measure the various rights and obligations. Should the rights and obligations in leases be likened to other assets and liabilities and the measurement basis be the one used for those assets and liabilities? For example, should the right to use property, plant, and equipment be measured as if it were owned property, plant, and equipment using existing standards? Or, should they all be measured the same way? If different measurement bases are used for different rights and obligations, how should changes in the measurements attributable to the differences in measurement basis be portrayed in financial statements? Should fair value be the measurement basis? As noted above, fair value measurement is a cross-cutting issue that also is relevant to the leasing project. The primary question in the insurance contracts project is how we should measure insurance liabilities—at fair value, some other current value measure, or something else? Why? There also are questions about which expected cash flows associated with an insurance contract arise from the current contract and, thus, represent a present obligation of the entity, and which arise from future contracts with the insured. Again, these questions need to be addressed in the context of the criteria in the conceptual framework.

Because the framework is the basis on which the boards make their standard-setting decisions, the conceptual framework project is a rich source of questions that can motivate research. The framework identifies the objective of financial reporting as providing useful information to outside providers of capital. Is this the most appropriate objective for financial reporting? Is it the case that achieving this objective will also result in providing useful information to other categories of financial statement users? How do investors use financial statement information? What does that tell us about what information financial statements should include and how they should be structured? Research would be helpful, for example, to help determine what the qualitative characteristics of accounting information should be given the objective of financial reporting. The current draft of the first two chapters of the revised conceptual framework identifies relevance and representational faithfulness as key, and describes other qualitative characteristics (IASB 2006a). Are these appropriate? How should we define financial statement elements, such as assets, liabilities, equity, income, and expense? How should financial statements deal with uncertainty? What criteria should we use to select the measurement basis? What are the characteristics of an entity for purposes of financial reporting? What is the appropriate unit of account when measuring and displaying financial statement elements?

Globalization of Financial Reporting

Another way researchers can contribute to global financial reporting is to address issues relating to globalization itself. Such research can study the characteristics of past international differences in accounting, the capital market effects of globalization, the relative quality of accounting amounts based on different sets of standards, and the effects of factors other than standards that likely vary internationally.[18]

International Differences

Much extant international research focuses on cross-country differences in accounting. Do different accounting treatments of a transaction provide the same information to the market or different information? If different, then which treatment provides better information, however better is defined? What are the differences in institutional and legal environments, and how do these differences manifest in financial reporting? However, taking a global view suggests we should focus on global investors and global capital markets. Thus, we should focus on the similarities around the world, not the differences. Understanding whether there are unique institutional features, for example, that affect accounting is important. However, the question is whether they should affect the accounting. Another open question is whether global investors' information needs vary depending on where they are located.

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[18] See also Meek and Thomas (2004) and Barth (2006b).

International research, including that focusing on international differences in accounting and reporting rather than on the similarities, can inform global financial reporting issues. First, such research can provide an international perspective on global issues. For example, as noted above there is a pervasive debate about whether historical cost or fair value should be the measurement basis. Although this debate is active around the world, there are different dimensions to the debate and different aspects of it are important to different people. Second, such research can address questions that are only addressable internationally. For example, if an empirical researcher is interested in the question of remeasuring property, plant, and equipment at current value, i.e., asset revaluations, then the researcher must obtain data from a country that permits asset revaluations. If a researcher is interested in the question of measuring inventories at Last In-First Out (LIFO), then the researcher likely needs to obtain data from the U.S. because LIFO is not widely used elsewhere. Third, such research can use different institutional settings around the world to gain a deeper understanding of an issue. For example, presumably we can learn more about pension accounting by studying different pension arrangements around the world. Fourth, such research can identify country-specific features that global standard-setters need to consider when writing global standards. Standard-setters typically think of economics as being the global equalizer. That is, they assume that if financial statements reflect the underlying economics of the circumstance, event, or transaction, then the objective of financial reporting will have been met. However, some are concerned that this might not be the case. If it is not the case, then it would be important to understand why.

We have learned quite a bit from international research. For example, research finds that no single country has a monopoly on good answers. Although many believe that the U.S. has the most comprehensive and highest quality financial reporting in the world, they likely would acknowledge that U.S. financial reporting is not perfect and that other countries have developed better accounting answers for some circumstances, events, or transactions. The many studies focusing on items in the Form 20-F reconciliations of non-U.S. domestic standards- to U.S. GAAP-based net income and shareholders' equity for non-U.S. firms provides supporting evidence for some of these differences (e.g., Hall et al. 1992; Amir et al. 1993; Niskanen et al. 1993; Bandyopadhyay et al. 1994; Harris et al. 1994; Barth and Clinch 1996).

Relative Accounting Quality

Another stream of research compares quality of accounting amounts based on U.S. GAAP, IFRS, and non-U.S. domestic standards. Research comparing accounting amounts of U.S. firms based on U.S. GAAP and those of non-U.S. firms based on non-U.S. domestic standards finds that accounting amounts of U.S. firms are of higher quality (Alford et al. 1993; Land and Lang 2002; Leuz et al. 2003). However, consistent with accounting quality depending not only on accounting standards, but also on how they are applied, Lang et al. (2006) and Bradshaw and Miller (2008) find that accounting amounts based on U.S. GAAP reported by non-U.S. firms that trade American Depository Receipts (ADRs) in the U.S. generally are lower quality than those of U.S. firms. Using a research design similar to Lang et al. (2006), among others, Barth, Landsman, Lang, and Williams (2007; hereafter BLLW) finds that accounting amounts of U.S. firms based on U.S. GAAP are of higher quality than accounting amounts of non-U.S. firms based on IFRS, although this finding is attributable to firms from Germanic/French legal origin countries. BLLW finds no discernible pattern of differences in quality between accounting amounts of non-U.S. firms based on IFRS and accounting amounts based on U.S. GAAP as reported on Form 20-F of cross-listed firms that prepare their financial statements using domestic standards. However, using a Dechow and Dichev (2002) measure of accrual quality and a sample of Canadian firms that cross-list in the U.S., Webster and Thornton (2004) finds that Canadian GAAP results in higher quality accounting amounts than does U.S. GAAP, and that U.S. GAAP-based accounting amounts of Canadian firms are of lower quality than accounting amounts of U.S. firms. Webster and Thornton (2004) interpret this finding as indicating that stronger U.S. regulatory oversight compensates for inferior quality of U.S. GAAP.

There are ample opportunities to extend this research, for example, by developing alternative measures of financial reporting quality or by testing for differences in quality for more recent years. Because application of IFRS became widespread only beginning in 2005, it is possible that any assessment of its quality could be affected by transition or learning effects. Also, since the time periods covered by extant research more countries have adopted IFRS or will do so in the next few years. Thus, this research also could be extended by including firms from these countries in the tests, thereby increasing the power of the tests and the generalizability of the inferences. Doing so also could permit tests of additional hypotheses related to accounting quality that might depend on institutional differences across countries, as described below.

Features of the Financial Reporting System Other than Standards

Research finds that informativeness of financial statements is linked to the legal system, shareholder protection, and the conformity of financial statements and tax reporting (e.g., Ball et al. 2000; Hung 2000). It also finds that cultures change slowly, not by fiat. Even if all firms were required to follow a particular IASB standard, there would be differences in how firms interpret the standard because of differences in their history and culture. Thus, even with global accounting standards we might not achieve global financial reporting. Research also finds that financial reporting quality depends on the incentives of managers, investors, and auditors that can differ around the world (Ball et al. 2003), and that corporate governance plays a key role in determining financial reporting quality (Ashbaugh and Warfield 2003). Research also finds that standards are unable to address all situations and they often lag practice (Ball et al. 2000; Ball et al. 2003). When local infrastructure is lacking, global standards might not even be optimal (Eccher and Healy 2003). Analytical research finds that fundamentally similar environments can end up in a different equilibrium with respect to accounting standards (Nagar and Petacchi 2005). However, the equilibrium can change dramatically with a relatively small shock to the system. This finding is intriguing because we observe differences in accounting standards around the world, which raises the questions of why we ended up at different equilibria and whether there is hope of reaching a common equilibrium. This research suggests that we can.

Capital Market Effects

Research finds that improved disclosure and financial statement transparency can reduce the cost of capital (see, e.g., Botosan 1997; Botosan and Plumlee 2002; Barth et al. 2003; Barth, Konchitchki, and Landsman 2007). For example, Leuz and Verrecchia (2000) find that firms using IAS or U.S. GAAP have lower bid-ask spreads and higher share turnover than firms using German standards. Barth et al. (2008) finds that accounting amounts based on IAS are higher quality than those based on non-U.S. domestic standards, where quality is measured using a variety of metrics for earnings management, timely loss recognition, and value relevance. Ashbaugh and Pincus (2001) finds that analyst's earnings forecast errors are lower for firms using IAS than for firms using non-U.S. domestic standards, which also can be interpreted as evidence of higher quality.

Research also finds that global harmonization can have beneficial capital market effects, such as decreasing cost of capital, increasing the ability of share prices to reflect information and increasing trading volume (Barth et al. 1999). Consistent with this, Armstrong et al. (2008; hereafter, ABJR) finds a significant positive European stock market reaction to regulatory events that increased the likelihood that IFRS would be adopted in Europe. Findings in ABJR suggest that this market reaction is associated with investors expecting net benefits associated with both increased financial reporting quality and increased harmonization. Research also finds that global financial reporting can improve global capital markets by reducing home bias in investing (Bradshaw et al. 2004; Covrig et al. 2007). This is because international investors are more likely to use data and information with which they are familiar and, thus, accounting information based on standards that are the same across countries are more likely to be commonly understood.

Questions for Future Research

There are many open questions that can motivate research on globalization of financial reporting. From these questions, researchers can craft research questions that relate to the motivating questions.

Questions relating to adoption of global standards include the following. Why do not all countries and firms adopt global standards? If global financial reporting has net benefits, then why haven't all countries and firms adopted them? Is it because the transaction costs required to change accounting systems are too high? Is it because political forces make countries unwilling to give up domestic standard-setting? If so, why? What are those forces? Is it even possible to write standards with global applicability? Clearly, the IASB believes is it possible, and is attempting to do it. However, no one has established that it can be done. Is a single set of global financial reporting standards optimal? Are there unidentified factors that make global standards less than optimal? For example, do global standards fail to reflect firms' underlying economics in some situations? If so, why?

Most observers understand that the IASB and FASB come under political pressure from time to time. Such political pressure can influence the selection of the board and staff. It also can influence the boards' standard-setting decisions. Pressure comes from comment letters, lobbying with governments, and governments overriding the standards after they are issued. The controversy in Europe regarding IAS 39 (IASB 2006c), the financial instrument standard, was widely reported in the business press. It culminated in the European Commission (EC) carving out several paragraphs of the standard. Subsequently, the EC reinstated the paragraph permitting the fair value option, but the hedge accounting carve-out remains. The Australian Accounting Standards Board (AASB) eliminated some options available in IFRS. It believes that providing options in financial reporting standards impairs comparability. However, recently the AASB concluded it is more important to adopt IFRS as written by the IASB, thereby obtaining comparability around the world, than it is to ensure comparability within Australia. Thus, the AASB is reinstating the options that it eliminated. Open questions relating to these issues include the following. What is the role of politics in standard-setting? What are the political forces? Do political forces from different countries offset or reinforce each other? Does the existence of political pressure on the standard-setting process result in higher or lower quality standards? That is, does political pressure provide a healthy tension or does it compromise the quality of the outcome?

As discussed above, several studies identify impediments to globalization largely relating to features of the financial reporting system other than standards. However, these studies provide little guidance on how to remove them. Some of the open questions are the following. Which institutions are the most critical to financial reporting? Do the impediments identified in research arise from transition issues that countries and firms face as they adopt international standards, or are they more systemic? How can we achieve globally consistent application and enforcement of standards? Does this require more activity by securities regulators? What is the role of auditing firms? Do we need to rely on voluntary action by firms? What institutions and incentive structures would help ensure global consistency? What is the role of the local information environment—such as analysts, the news media, press releases, rating agencies, market microstructure, and creditors? Although there is a body of research that studies these features of the information environment in the U.S., these features are less well studied outside of the U.S. Even the U.S.-based studies do not clearly identify how all of these information environment features interact with financial reporting. What would be the effects of more timely reporting, enhanced disclosure, additional safeguards, increased auditor oversight, greater enforcement, or a uniform approach to securities regulation around the world? Can we predict these effects? Are there unintended consequences of such changes that can be anticipated?

Globalization of financial reporting undoubtedly has costs—change is always costly. Also, global financial reporting standards offer fewer safe harbors and bright-line rules. Thus, firms and others need to learn to live with ambiguity and become more comfortable with making financial reporting judgments. There also are costs associated with understanding and accepting different perspectives. However, many believe that the benefits outweigh the costs, although the benefits can be more difficult to determine. Questions relating to the potential benefits include the following. Does global financial reporting reduce firms' cost of capital? Some extant theoretical and empirical evidence suggests that it can.[19] However, the evidence is only beginning to emerge. Does global financial reporting facilitate the allocation of capital and cross-border trading? Does global financial reporting reduce home country investing bias? Are global standards higher quality? Although the demand for globalization of financial reporting arises primarily from global capital markets, it has other benefits as well. Global financial reporting can facilitate mobility not only of capital, but also of ideas and people. Students who learn the global financial reporting language will be able to use it around the world. Is there evidence of these benefits?

V. CONCLUDING REMARKS

Globalization of financial reporting is becoming a reality. However, many challenges remain. There are many around the world unfamiliar with independent standard-setting and an investor focus for financial reporting. They are struggling with the changes but are learning. No change is universally popular, and revolutionary "big bang" change is very difficult. Evolutionary change is somewhat easier to implement and absorb, although changing multiple times is costly. We also have not yet fully resolved the issue of individual country modifications to standards, which stand in the way of truly global financial reporting. Outside of the U.S., there is a concern that the U.S. will dominate. This concern relates not only to our thinking about issues, but also to the way the standards are written. In particular, there is a concern that the U.S. tendency to provide considerable detailed guidance will manifest itself in global standards. Inside the U.S., there is a concern that IFRS lack rigor and, thus, are not high quality. There also is a concern that the standards are not specific enough and enforcement around the world is not strict enough to ensure consistent application. Clearly, there is a tension. However, progress in the last five years toward global financial reporting has been breathtaking, and it continues apace. The SEC permitting use of IFRS in the U.S. would be a major step forward.

The implications for U.S. academics are profound. The U.S. is deeply involved in and will be affected by global financial reporting. U.S. academics need to educate first themselves and then their students to be able to participate in a global world. There also is a myriad of open questions for research that U.S. academics can address. The capital markets are demanding a single language of business. They are demanding that the single language of business be developed internationally, not solely in the U.S. This demand for a single global language of business will be met. The market forces are too great to stop. The question is how, not whether, it will happen, and how, not whether, U.S. academics will participate.

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[19] See Barth, Konchitchki, and Landsman (2007) for an overview of this literature.

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Characteristics of Securitizations that Determine Issuers' Retention of the Risks of the Securitized Assets

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ABSTRACT: We hypothesize and provide evidence that characteristics of banks' loan securitizations accounted for as sales determine the extent to which banks retain the risks of the securitized loans. We show that banks retain more risk when: (1) the types of loans have higher and/or less externally verifiable credit risk, (2) the loans are closed-ended and banks retain larger contractual interests in the loans, and (3) the loans are closed-ended and banks retain types of contractual interests that more strongly concentrate the risk of the securitized loans. We show that the magnitude and type of retained contractual interests are not risk-relevant in revolving loan securitizations, because banks have more incentive and ability to provide implicit recourse, a non-contractual interest.

Keywords: *securitization; banks; retained interests; implicit recourse; SFAS No. 140; risk.*

Data Availability: *Data used in this study are available from public sources.*

I. INTRODUCTION

In this paper, we hypothesize and provide evidence that certain general characteristics of banks' loan securitizations accounted for as sales—the types of loans securitized and, in closed-end loan securitizations, the amounts and types of contractual retained interests—determine the extent to which banks retain the risks of the off-balance sheet securitized loans.

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Banks may retain these risks through contractual or non-contractual (implicit) interests. Similar to the prior literature examining the risk-relevance of firms' off-balance sheet positions (e.g., Bowman 1980; Dhaliwal 1986), we test our hypotheses by estimating the association of a measure of banks' equity risk with the characteristics of their loan securitizations. Because prior research finds that banks' credit risk has both unsystematic and systematic components with the unsystematic component dominating,[1] we empirically examine banks' total equity risk as measured by future stock return volatility. We infer that banks retain more of the risk of their securitized loans when their total equity risk is more positively associated with their off-balance sheet securitized loans and on-balance sheet contractual retained interests in those loans, all else being equal. We control for a host of variables to ensure that our securitization characteristics do not proxy for other risk-relevant bank attributes.

Our paper addresses a limitation of prior research on financial asset transfers including securitizations identified by Schipper and Yohn (2007): "[T]he research often aggregates, for purposes of analysis, financial asset transfers with different structures and characteristics." Our results are consistent with Moody's Investor Service (2002, 9) view that "the ultimate amount of risk transference achieved through securitization depends on the specific structure of the transaction," a view elaborated on by Ryan (2007, Chapter 8).

Appropriately modified, our hypotheses also apply to securitizations of financial assets other than loans, by issuers other than banks, and that are accounted for as secured borrowings rather than sales. We chose to focus empirically on banks' loan securitizations to increase the specificity of the hypotheses that we are able to test with observable characteristics of securitizations and to control for factors other than securitizations that affect issuers' risk. We had to focus empirically on securitizations accounted for as sales, however, because the characteristics of securitizations accounted for as secured borrowings generally are not observable.

In a typical securitization, the issuer places financial assets in a legally isolated entity, where they serve as collateral for the entity's issuance of one or more types of asset-backed securities (ABS) and often other types of contractual interests. Different types of contractual interests bear the credit and other risks of the securitized assets in some order(s). Contractual interests that bear first or other early risk of loss (hereafter, first risk of loss) are similar to derivatives in having relatively small value and concentrated risk compared to the securitized assets. To mitigate adverse selection problems arising from issuers having superior information about securitized assets' credit risks than do potential ABS purchasers, issuers typically retain first-loss contractual interests and sell senior contractual interests to investors. In addition or alternatively, issuers may provide implicit recourse, that is, voluntarily support securitizations if and when the securitized assets under-perform. Implicit recourse is a first-loss non-contractual interest.

First-loss interests, whether contractual or not, raise difficult accounting and disclosure issues for standard-setters. A main accounting issue is whether issuers should account for and present these interests on the balance sheet gross as the securitized assets and the sold interests or instead net as the retained interests. Gross accounting and presentation could be accomplished either by requiring issuers to account for securitizations as secured borrowings or by requiring issuers or other holders of first-loss interests to consolidate securitization entities. The main disclosure issue is what quantitative and qualitative disclosures of these positions best portray the risks borne by these interests.

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[1] A large literature in banking and finance (frequently referenced in bank regulatory documents) shows theoretically and empirically that, despite the strong correlation of banking industry credit losses with the business cycle, banks' credit risk is substantially unsystematic due to their imperfect diversification geographically and by type of loan. For example, Treacy and Carey (1998) state that "default studies and other analyses tend to show that variations in one-year default rates on investment-grade assets tend to be driven by idiosyncratic factors rather than the credit cycle." Hall et al. (2001) and Vander Vennet et al. (2005) document significant associations between banks' return volatility and measures of their credit risk.

First-loss interests also raise issues for users of financial reports interested in assessing issuers' risk. To make this assessment, users need to understand the characteristics of these interests and how those characteristics map into issuers' risk. The importance of accurately assessing such risk is illustrated by the large losses recently recorded by subprime mortgage banks and the firms that provided them with financing or that purchased or guaranteed their ABS.

Niu and Richardson (2006) is the prior paper closest to ours. They conduct a risk-association analysis that is motivated by the accounting issues raised by securitizations. For a multi-industry sample of issuers, they find that on average issuers' systematic equity risk has approximately the same association with their off-balance sheet ABS arising from securitizations accounted for as sales as with their on-balance sheet debt. They interpret this finding as consistent with most securitizations accounted for as sales being secured borrowings from a risk-and-rewards perspective.

While we also conduct a risk-association analysis, our paper is instead motivated by the disclosure and analysis issues raised by securitizations. We hypothesize and provide evidence that securitizations, depending on their characteristics, vary considerably in the extent to which issuers retain the risk of the securitized assets.

We examine empirically three general characteristics of banks' loan securitizations that capture differences in banks' retention of the risks of the loans. The first characteristic is which of three broad types of loans that differ in the extent and external verifiability of the loans' credit risk is involved: 1–4 family residential mortgages (hereafter, mortgages), other consumer loans (hereafter, consumer loans), and commercial loans and leases (hereafter, commercial loans). More homogeneous/standardized loans generally have more externally verifiable credit risk. On average, commercial loans have relatively high and difficult to verify credit risk, consumer loans have relatively high but easier to verify credit risk, and mortgages have relatively low and easy to verify credit risk.

The second characteristic is whether the loans are revolving (credit card receivables or home equity lines of credit). Unlike securitizations of closed-end loans, revolving loan securitizations typically have two features that provide issuers with more incentive and ability to provide implicit recourse: contractual provisions for early amortization (i.e., accelerated payout to ABS holders) when the securitized loans under-perform and master trusts that do not segregate the loans from different securitizations.

The third characteristic is the magnitude and type of contractual retained interests. We distinguish two types of first-loss contractual retained interests: credit-enhancing interest-only strips and other subordinated ABS (hereafter, subordinated ABS). These types differ in whether they receive principal payments and in their degree of subordination. Credit-enhancing interest-only strips receive no principal and typically are subordinated to subordinated ABS, and so they are riskier than subordinated ABS, all else being equal.

We develop and test three hypotheses about how banks' retention of the risks of their off-balance sheet securitized loans depends on these securitization characteristics. First, banks must retain larger contractual or non-contractual first-loss interests in off-balance sheet securitized loans with higher and/or less externally verifiable credit risk in order to protect ABS purchasers against adverse selection. Hence, we hypothesize that banks' total equity risk is, on average, associated most positively with their securitized commercial loans, next most positively with their securitized consumer loans, and least positively with their securitized mortgages. Second, we hypothesize that banks' total equity risk is positively associated with their on-balance sheet first-loss contractual retained interests from securitizations of close-ended mortgages and commercial loans, but not from securitizations of revolving consumer loans. We make no hypotheses about contractual retained interests from revolving loan securitizations because of the critical role that implicit recourse plays in those securitizations, and because the provision of implicit recourse and the retention of contractual interests are substitutable ways for the bank to retain the risk of these loans and so should be negatively correlated. Third, we hypothesize that banks' total equity risk is more positively associated with retained credit-enhancing interest-only strips than with retained subordinated ABS.

Our empirical results provide support for all three hypotheses, consistent with our securitization characteristics capturing the extent of banks' retention of the risk of their securitized loans. While the securitization characteristics all are right-skewed, our results are robust to various approaches to pulling in observations with large values of those characteristics and to reducing the weight placed on influential observations. Our strongest and most robust finding is that banks' total equity risk is highly positively associated with retained credit-enhancing interest-only strips from their mortgage and commercial loan securitizations.

The explanatory power of our empirical model of banks' total equity risk rises substantially with the addition of the securitization characteristics, from 16.9 percent to 22.6 percent, despite the fact that the base model includes the bank's total securitized loans, essentially all of the variables that prior research has found to be associated with cross-sectional variation in banks' equity risk, and a host of other potentially risk-relevant control variables. Strikingly, we find that banks' various types of off-balance sheet securitized loans and on-balance sheet retained interests from securitizations are more strongly and differentially associated with their total equity risk than are their various types of on-balance sheet loans. This suggests that banks' securitized loans and retained interests are more varied in their risk implications than are their various types of on-balance sheet loans, perhaps because the latter must meet common risk management guidelines. Our results have direct implications for useful disclosures about the characteristics of securitizations and for how users should assess issuers' risk.

The remainder of the paper is organized as follows. Because we examine securitizations at a level of contextual detail that may be unfamiliar to readers, Section II describes securitizations, their characteristics, and the accounting for them under SFAS No. 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities* (FASB 2000), at some length. Section III describes the prior literatures on the risk-relevance of off-balance sheet positions and on securitizations upon which we draw and to which we contribute. Section IV develops our hypotheses. Section V describes the variables and sample and discusses various descriptive analyses. Section VI reports the results of the regression analyses conducted to test our hypotheses. Section VII concludes.

II. SECURITIZATION CHARACTERISTICS AND ACCOUNTING

Typical Securitization Structure

At the initiation of a typical securitization, the issuer transfers financial assets to a special-purpose entity (SPE)—actually, usually through a wholly owned SPE to the main SPE—to legally isolate the assets even in the case of the issuer's bankruptcy. The SPE sells one or more types of ABS representing claims to the cash flows generated by those assets to investors, with the issuer often retaining some portion of the ABS or other contractual interests (e.g., servicing rights and recourse obligations). The SPE conveys the cash it receives from investors back to the issuer. Subsequently, the SPE forwards the cash received on the securitized assets to investors, the issuer, and any other claimants (e.g., third-party guarantors).

Types of Loans Securitized

We examine three distinct types of loans: mortgages, consumer loans, and commercial loans. These types differ in the extent and external verifiability of the loans' credit risk and thus in the extent to which banks must retain first-loss interests in the loans in order to protect ABS purchasers against adverse selection problems arising from banks having superior knowledge about the loans' credit risks.[2] More homogeneous/standardized types of loans and loans for which banks engage in less cherry-picking of which to retain versus sell have more externally verifiable credit risk.

On average, mortgages have the lowest and most externally verifiable credit risk, because the vast majority of outstanding mortgages are governmental, prime, and/or conforming[3] mortgages that are well collateralized; are guaranteed against default by the U.S. government, Fannie Mae, or Freddie Mac; involve borrowers with unimpaired credit (prime mortgages); and/or meet standardized criteria intended to ensure low credit risk (conforming mortgages). For example, in 2003 only 9 percent of mortgages originated were subprime and 84 percent of those mortgages were the highest (A –) grade of subprime (Chomsisengphet and Pennington-Cross 2006).

From 2004–2006, however, over 20 percent of mortgage originations were subprime (U.S. Government Accountability Office 2007). Unfortunately, our regulatory and other available data sources do not distinguish banks' prime and subprime securitized mortgages, a limitation of our study. We believe this limitation is relatively mild, however, because Carlson and Weinbach (2007) state that "commercial banks [as opposed to mortgage banks, other finance companies, and investment banks] generally appear not to have been involved significantly in making nontraditional and subprime mortgages" and our sample is comprised entirely of commercial banks.[4] In addition, our results are not significantly affected by excluding the 2004–2006 period.

In contrast, consumer loans often experience moderate to high credit losses, but they are homogeneous/standardized loan products, and so the external verifiability of their credit risk is relatively high. For example, in the prospectuses for securitizations of these loans, banks invariably provide extensive statistical analysis of delinquencies, charge-offs, and borrowers' FICO[5] (credit) scores both for the securitized loans and for their prior securitizations of the same type of loans.[6] In addition, banks commonly securitize all of their consumer loans meeting specified criteria, which significantly mitigates problems with banks cherry-picking some loans to retain versus securitize.

Finally, commercial loans may be credit-risky and, as the individually largest and least standardized/homogeneous loan type, statistical analysis of historical data for these loans is less likely to be useful. Hence, the external verifiability of their credit risk is relatively low. In addition, since banks generally securitize a low percentage of their commercial loans, cherry-picking is much more likely to be a problem.

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[2] Adverse selection typically occurs when a seller has better information than a buyer about the good being sold (as occurs in sales of used assets and loan securitizations) or *vice versa* (as occurs in insurance). Adverse selection can lead to partial or complete market breakdown, because for any fixed sales price only sellers or buyers who find that price attractive (i.e., sellers of sufficiently low-quality assets or sufficiently risky insurees) will be willing to transact. Market breakdown can be mitigated by reducing the information asymmetry between buyers and sellers, obtaining guarantees from or bonding of the better informed parties, and various other means.

[3] A conforming mortgage is one that meets criteria that allow Fannie Mae and Freddie Mac to guarantee it. These criteria include maximum principal amounts, principal-to-property value ratios, debt-to-income ratios, and full mortgage documentation.

[4] As discussed by Ryan (2008), during the subprime crisis a few large commercial banks (e.g., Citigroup) recorded large losses on retained super senior positions from collateralized debt obligation (CDO) resecuritizations of subprime mortgage-backed securities and other assets. As discussed in Section V, we include CDO resecuritizations in commercial loan securitizations, not in mortgage securitizations.

[5] FICO is an acronym for the Fair Isaac Corporation.

[6] For example, see Capital One's August 3, 2007 amended prospectus for a credit card securitization, pp. A-I-2 to A-I-12, at http://www.sec.gov/Archives/edgar/data/922869/000119312507171446/d424b5.htm.

Credit Enhancement

Issuers generally know more about the credit risks (but not the market risks, such as interest rate and prepayment risks) of the securitized assets than do potential purchasers of ABS. For this reason, securitizations of credit-risky assets usually must be "credit enhanced." Credit enhancement involves issuers or in some cases third parties assuming sufficiently large first-loss interests in the securitized assets so that purchasers of the ABS are protected against adverse selection. Issuers can assume these positions either by retaining contractual interests or by providing implicit recourse.

Retention of Contractual Interests

Issuers retain three general types of contractual interests in securitized assets—servicing rights, recourse obligations, and ABS—each of which can help to credit enhance securitizations. Servicing rights usually have relatively small value and play a small role in credit enhancement, however, and so we do not examine them in this paper. Significant recourse obligations (i.e., more than the usual representations, warranties, and early payment default obligations) are relatively rare, and so we also do not examine them in this paper.[7] By far the most common form of credit enhancement is retention by the issuer of ABS that bear first risk of loss on the securitized assets, so that the senior securities sold to investors are protected against credit risk. The two most important types of first-loss ABS are credit-enhancing interest-only strips and subordinated ABS. Credit-enhancing strips have considerably more concentrated risk than subordinated ABS, all else being equal, for reasons that are discussed next and illustrated using a numerical example at the end of this section.

Credit-enhancing interest-only strips are a type of ABS that receives the difference, if positive, between the interest rate earned on the securitized loans and the weighted-average interest rate paid on the more senior ABS, referred to as the excess spread. For an interest-only strip to be deemed credit-enhancing, the excess spread must decline with the credit losses on the securitized loans. Though referred to only as credit-enhancing, these strips typically also concentrate the noncredit risks of the securitized loans, particularly prepayment risk, since if the loans prepay the excess spread disappears. Because credit-enhancing interest-only strips have no right to the principal payments on the securitized financial loans, they usually have very small value and concentrated risks.

In contrast, subordinated ABS have the right to receive principal payments, but only after principal payments to the holders of more senior ABS have been made. Both for this reason and because they generally bear only the credit risks of the securitized assets in concentrated form, subordinated ABS have larger value than credit-enhancing interest-only strips with the same credit risk. Moreover, in securitizations in which both credit-enhancing interest-only strips and subordinated ABS are retained, the credit-enhancing interest-only strips typically bear the first risk even of credit loss.

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[7] The losses experienced by subprime mortgage banks in 2007 were due in part to early-payment-default provisions in their loan sale agreements that required the banks to repurchase mortgages sold that default shortly (generally within one to three months) after sale. In normal circumstances, these provisions are much less significant than full recourse, being closer in spirit to representations and warranties. Early-payment defaults on subprime mortgages began to occur at dramatically increased rates around the middle of 2006, however, in part because of the increasingly lax standards for originations of those mortgages during that year, but primarily because U.S. house prices peaked in July 2006 and declined subsequently, according to the S&P/Case-Shiller® housing index. As discussed in detail in Ryan (2008), house price appreciation diminishes losses on subprime mortgages because it allows mortgagees to avoid default by engaging in cash-out refinancing or by selling their home.

Implicit Recourse

Purchasers of ABS may be protected against adverse selection if issuers have the incentive and ability to provide implicit recourse—i.e., to take actions to increase the value of the assets in the securitization SPE—when the securitized financial assets under-perform. Issuers can provide implicit recourse by: (1) contributing assets to the SPE for less than their fair value, (2) purchasing assets from the SPE at a price greater than their fair value, (3) exchanging better quality assets for worse quality assets, and (4) providing recourse or other credit enhancement beyond contractual requirements.

Implicit recourse generally is an issue only for securitizations of revolving loans with no fixed maturity, in particular, credit card receivables and home equity lines of credit. Because the principal in revolving loan securitizations fluctuates with uncertain future borrowings and payments on the revolving loans, issuers typically must contribute or remove loans from the SPEs as needed to maintain the outstanding principal at the desired levels. Because of the ongoing relationship between issuers and the SPEs in these securitizations, issuers have the incentive to maintain their reputation to facilitate future securitizations. Moreover, these securitizations generally are subject to contractual provisions that require early amortization (i.e., accelerated payout on the ABS) if the securitized loans perform poorly. These provisions yield incentives for issuers to provide implicit recourse to avoid losing the financing provided by the ABS.[8]

In addition, the vast majority of credit card (and a large portion of home equity line of credit) securitizations employ master trusts that issue multiple series of ABS backed by the same underlying loans. Because the loans in the master trust are not segregated, all of the loans collectively support all the series of ABS issued. Master trusts allow issuers to provide implicit recourse in the ordinary course of business and thus opaquely by issuing new series of securities backed by more or higher quality loans.

While issuers in revolving loan securitizations often retain contractual interests, they generally are most exposed to the risk of the securitized loans through the provision of implicit recourse. When purchasers of ABS believe that issuers are more likely to provide implicit recourse, issuers should be able to retain fewer contractual interests, all else being equal. This should yield a negative association between the issuer's retention of contractual interests and its retention of the risk of the securitized loans.

Accounting for Securitizations under SFAS No. 140

The required accounting treatment for securitizations under SFAS No. 140 is determined by whether the issuer surrenders control over the financial assets. For control over the financial assets to be deemed surrendered, paragraph 9 of the standard requires that all three of the following conditions (stated more simply than in the standard) be met:

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[8] In Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation, Board of Governors of the Federal Reserve System, and Office of Thrift Supervision (2002), the primary U.S. bank regulators state that "[p]articular attention [regarding implicit recourse] should be paid to revolving securitizations, such as those used for credit card lines and home equity lines of credit, where receivables generated by the lines are sold into the securitization. Typically, these securitizations provide that, when certain performance criteria hit specified thresholds, no new receivables can be sold into the securitization, and the principal on the bonds issued will begin to pay out. Such an event, known as an early amortization event, is intended to protect investors from further deterioration in the underlying asset pool. Once an early amortization event occurs, the banking organization could have difficulties using securitization as a continuing source of funding for new receivables. Thus, banking organizations have an incentive to avoid early amortization by providing implicit support to the securitization."

1. the assets are legally isolated from the issuer,
2. the transferee is able to pledge or exchange the assets, and
3. the issuer does not retain effective control over the assets through the right and obligation to repurchase the assets or the unilateral ability to obtain specific assets (other than through a cleanup call at the end of the life of the securitization).

The third condition is less restrictive than it may seem; for example, the issuer can repurchase specific assets conditional on an event outside its control, such as default, and meet this condition. When such an event occurs, however, any prior sale accounting for the specific assets affected by the event is reversed, even if the issuer has not yet repurchased the assets.

SFAS No. 140 requires securitizations in which the issuer does not surrender control over the securitized financial assets to be accounted for as secured borrowings. Under secured borrowing accounting, the issuer reclassifies the financial assets as pledged and records debt for the amount of cash received plus the fair value of any noncash proceeds that are not beneficial interests in the securitized assets.

SFAS No. 140, as amended by SFAS No. 156, *Accounting for Servicing of Financial Assets* (FASB 2006), requires a securitization of financial assets in which the issuer surrenders control over the assets to be accounted for as a sale to the extent that the issuer receives consideration other than the ABS issued in that securitization.[9] In other words, a securitization that qualifies for sale accounting but for which the issuer retains a portion of the ABS is treated as a partial sale of the securitized assets. Under sale accounting, the issuer:

1. derecognizes the securitized financial assets;
2. records cash in the amount received and recognizes any noncash proceeds that are not beneficial interests in the securitized assets at fair value;
3. recognizes retained ABS at the book value of the securitized assets times the fair value of the retained securities divided by the fair value of the securitized assets;
4. recognizes retained contractual interests other than ABS, including servicing assets and recourse liabilities, at fair value; and
5. records a gain or loss on sale to make the journal entry balance.

Whether a firm's securitizations meet SFAS No. 140's control-based requirements for sale accounting or not has significant effects on its financial statements. Compared to secured borrowing accounting, sale accounting reduces reported debt and raises reported owners' equity and net income when a gain on sale is recognized. There are also effects on the classification of income and cash flows.

A Numerical Example

The following numerical example illustrates how securitizations are structured, how securitization accounting under SFAS No. 140 works, and the distinct natures of credit-enhancing interest-only strips and subordinated ABS. An issuer holds financial assets with face and book values of \$100 million and a stated yield of 6 percent that are scheduled to pay \$20 million plus accrued interest at the end of each year for five years. The contractual payments on the financial assets are \$26 million = \$20 million + \$100 million × .06 in year 1, \$24.8 million = \$20 million + \$80 million × .06 in year 2, and so on. The issuer places those assets into an SPE that issues \$80 million face value of senior ABS yielding 5 percent that are sold to outside investors and $20 million face value of subordinated ABS yielding 7.5 percent that are retained by the issuer. Both the senior and subordinated ABS are scheduled to pay principal of one-fifth their face value plus accrued interest at the end of each year for five years.

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[9] SFAS No. 156 (FASB 2006) requires servicing assets retained in a securitization to be recognized at fair value at initiation as part of the proceeds of the securitization; these rights previously were recognized at initiation in a similar fashion as retained ABS.

The weighted-average yield on the senior and subordinated ABS is 5.5 percent = [(80 × .05) + (20 × .075)] / 100, which is below the 6 percent yield on the securitized financial assets. In the absence of default on the financial assets, this leaves an initial excess spread of 0.5 percent to be paid to a credit-enhancing interest-only strip that is retained by the issuer. The issuer receives nothing on the retained subordinated ABS in a period unless the senior ABS are current as to principal and interest.[10] The issuer receives nothing on the retained credit-enhancing interest-only strip until both the senior and subordinated ABS are fully paid off in year 5.[11] Thus the credit-enhancing interest-only strip is subordinated to the subordinated ABS, as is usually the case in practice in securitizations in which both types of interests are issued.

In the first year of the securitization, the contractual payments are $20 million = $16 million + $80 million × .05 on the senior ABS and $5.5 million = $4 million + $20 million × .075 on the subordinated ABS. If the securitized financial assets pay $25.5 million or more in year 1, then the holders of both the senior and subordinated ABS receive their contractual payments and any excess amount received on the securitized assets over $25.5 million (a maximum of $.5 million) accrues to the benefit of the credit-enhancing interest-only strip. If the securitized assets pay more than $20 million but less than $25.5 million in year 1, then the senior ABS holders receive their contractual payments, but the subordinated ABS holders receive less than their contractual payments and any amount unpaid to the subordinated ABS holders must be made up in subsequent years before any amount can accrue to the benefit of the credit-enhancing interest-only strip. If the securitized assets pay less than $20 million in year 1, then the holders of the senior ABS also do not receive their contractual payments in full in that year. Thus, the credit-enhancing interest-only strip is the riskiest first-loss position, the subordinated ABS are a less risky second-loss position, and the senior ABS are in the least risky third-loss position.

To illustrate the accounting, assume the fair value of the senior and subordinated ABS equal their face values and the fair value of the credit-enhancing interest-only strip equals $1 million. If SFAS No. 140s control criteria are satisfied, then sale accounting is used, and the issuer:

1. derecognizes the $100 million financial assets,
2. records cash for the $80 million received,
3. recognizes subordinated ABS of $19.8 million = $100 million × $20 million / $101 million and a credit-enhancing interest-only strip of $.99 million = $100 million × $1 million / $101 million, and
4. records a gain on sale of $.79 million.

In contrast, if SFAS No. 140's control criteria are not satisfied, then secured borrowing accounting is used, and the issuer reclassifies the financial assets as pledged and records debt for the $80 million cash received.

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[10] In practice, the level of subordination of subordinated *ABS* can be greater or less than the level assumed in this example. For example, less subordinated *ABS* might receive something in a period even if the senior *ABS* are not fully current with respect to past principal and interest payments, while more subordinated *ABS* might receive nothing until the senior *ABS* are paid off in part or whole.

[11] The credit-enhancing interest-only strip in this example is a pure residual interest that receives whatever is left over in the SPE after the other interests are fully paid off. While credit-enhancing interest-only strips inherently have some of the character of a residual interest, in practice they are often less than pure residual interests.

III. RELATED PRIOR RESEARCH

Association between Equity Risk and Off-Balance Sheet Positions Other than Securitizations

A large literature in accounting and finance surveyed in Ryan (1997) investigates the association between measures of firms' equity risk and firms' financial report information, the general research area of our study. The most relevant portion of this literature for our paper examines the association between measures of firms' equity risk, primarily beta but also the standard deviation of returns and other market- and accounting-based measures of equity risk, and their off-balance sheet positions, usually economic liabilities but sometimes economic assets. The empirical models estimated in these papers generally are motivated by the theoretical analysis of Hamada (1972), who shows that the beta (systematic risk) of a levered firm equals the beta of an unlevered firm times one plus the firm's (properly measured) debt-to-equity ratio. It is easy to show that financial leverage has similar effects on the standard deviation of returns and other market and accounting measures of equity risk.

The empirical models estimated in this literature regress beta, standard deviation of returns, or other equity risk measures on measures of the effects of off-balance sheet positions on financial leverage. These measures sometimes are interacted with unlevered equity risk measures—as Hamada's (1972) analysis suggests should be done but which raises the issue of measurement error in unlevered equity risk measures—and sometimes not.

This literature has examined a variety of off-balance sheet positions including: minimum payments under operating leases (Bowman 1980; Imhoff et al. 1993); unrecognized pension liabilities (Dhaliwal 1986); derivatives prior to their required recognition on the balance sheet under SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities* (FASB 1998), (McAnally 1996; Schrand 1997; Hentschel and Kothari 2001), and loan commitments (Avery and Berger 1991; Boot and Thakor 1991). These papers generally find that off-balance sheet positions are associated with measures of equity risk in much the same way as are on-balance sheet positions, at least once the association between off- and on-balance sheet positions is controlled for, an issue addressed with particular care by Bowman (1980).

Associations between the Risk and Value of Equity and Off-Balance Sheet Securitizations

Dionne and Harchaoui (2003), Niu and Richardson (2006), and Hänsel and Krahnen (2007) investigate the association between measures of firms' equity risk and their off-balance sheet positions arising from securitizations accounted for as sales, and as such are direct precursors of our study. The findings of these studies are similar to those in the literature on the risk-relevance of other off-balance sheet positions just described. Specifically, Dionne and Harchaoui (2003) show that the change in securitized loans is positively associated with measures of credit risk for a sample of Canadian banks. Niu and Richardson (2006) find that issuers' beta has the same association with their off-balance sheet ABS as with their on-balance sheet debt for a multi-industry sample of U.S. firms. Hänsel and Krahnen (2007) find that firms engaging in European collateralized debt obligation securitizations experience increases in beta subsequent to the securitizations. They also find that these increases are larger for unfunded synthetic securitizations that transfer credit risk only (typically using credit derivatives) and that these securitizations tend not to involve mortgages.

Our research design and interpretation of results differ from those in Niu and Richardson (2006), the most related prior study, in two ways that yield the contributions of our study. First, unlike that study we do not attempt to test whether the risk-relevance of off-balance assets and ABS are equal to that of on-balance sheet assets and debt. We focus instead on identifying the characteristics of banks' loan securitizations that are associated with their equity risk, and on quantifying those associations. This focus allows us to control for a broad set of variables that prior research has found to be associated with bank risk. In this respect, our approach is somewhat closer to that of Dionne and Harchaoui (2003).

Second, while restricting our sample to banks reduces the external validity of our study compared to Niu and Richardson's (2006) study of a multi-industry sample, it increases the power and specificity of our tests by providing us with greater ability to observe the characteristics of securitizations and to control for factors other than securitizations that are associated with issuers' risk. While Niu and Richardson (2006) use financial report data (and must do so for their non-bank firms), we collect data on the characteristics of securitizations from quarterly Y-9C regulatory filings by U.S. bank holding companies. These data include securitized loans by type of loan and contractual retained interests by type of interest, and so allow us to test the detailed hypotheses described in the introduction.

Landsman et al. (2006) examine the association between the market value of equity and off-balance sheet positions arising from securitizations accounted for as sales for a multi-industry sample of U.S. firms. Analogous to Niu and Richardson's (2006) findings regarding risk-relevance, Landsman et al. (2006) find that issuers' market value of equity has the same associations with their off-balance sheet assets and ABS as with their on-balance sheet assets and debt for their overall sample and also for issuers whose contractual retained interests from securitizations as a percentage of their balance sheet assets are above the sample median. However, they find that issuers' market value is insignificantly associated with their off-balance sheet assets and ABS for issuers whose contractual retained interests from securitizations as a percentage of their balance sheet assets are below the sample median. Unlike Landsman et al. (2006), we conduct a risk- not value-association study, and we improve upon their binary classification of the magnitude of total contractual retained interests by employing continuous measures of the magnitude of two distinct types of those interests.

Other Research on Securitizations

Schipper and Yohn (2007) survey the literature on transfers of financial assets, which includes both securitizations and conventional sales of those assets. They identify five research questions regarding securitizations and discuss how these questions have been addressed by the literature. The fourth of these questions is the treatment of securitizations by investors, which is addressed by the risk- and value-relevance papers just described and also by our paper. Below, we summarize the research on their second and third questions, which have direct implications for our research design and hypotheses.

Schipper and Yohn's (2007) second research question addresses issuers' diverse motivations for securitizations. Research finds that issuers tend to: have high risk or leverage and/or want to mitigate or diversify risks (Pavel and Phillis 1987); have low liquidity (Karaoglu 2005); try to lower their cost of capital by securitizing their low-risk assets and isolating those assets from their bankruptcy (Greenbaum and Thakor 1987; Ambrose et al. 2003; Minton et al. 2004; Gorton and Souleles 2005; Ayotte and Gaon 2005); focus on the efficient generation of fee income and gains on sale (Pavel and Phillis 1987; Karaoglu 2005); manage accounting numbers through the volume and timing of securitizations, the type of assets securitized, and the (mis)valuation of retained interests (Shakespeare 2004; Dechow et al. 2005; Karaoglu 2005; Dechow and Shakespeare 2006); and manage regulatory capital requirements down, although high capital firms are more active securitizers, primarily because they retain higher risk assets (Jones 2000; Dionne and Harchaoui 2003; Minton et al. 2004; Nolan 2005). This literature indicates the importance of incorporating characteristics of the issuer, the type of financial assets securitized, and the valuation of retained interests into any analysis of the implications of securitizations. In this paper, we focus on the effects of type of loan securitized and the type and magnitude of retained interests, and we control for various characteristics of issuers that we expect to be associated with their total equity risk.

Schipper and Yohn's (2007) third research question is whether firms provide (implicit) recourse in securitizations and why they are motivated to do so. Gorton and Souleles (2005) show analytically that in a repeated-play game issuers have incentives to commit to provide implicit recourse, and Calomiris and Mason (2004) and Higgins and Mason (2004) find that banks sometimes do provide such recourse in revolving credit card securitizations. As discussed earlier, revolving loan securitizations have distinct features that give issuers greater incentive and ability to provide implicit recourse than in other securitizations, and we believe implicit recourse is unlikely to have any significant effect on our results regarding securitizations of mortgages and commercial loans.

IV. HYPOTHESES

In this section, we develop three hypotheses about how banks' total equity risk depends on the characteristics of their securitizations accounted for as sales. Our hypotheses all follow from the following observation. Issuers' reported assets and liabilities concentrate the risk of the off-balance sheet securitized financial assets if and only if two conditions hold: (1) the off-balance sheet securitized financial assets have risk and (2) issuers retain first-loss interests in the securitized assets that they record on their balance sheets at relatively small value (contractual interests) or no value (implicit recourse).[12] In particular, if issuers simply retain contractual interests that are identical to those sold to investors, as occurs in "pass through" securitizations, then no such risk concentration occurs.

The straightforwardness of the above observation implies that our hypotheses do not pertain to the expected or possible resolutions of economic tensions. Rather these hypotheses and our tests of them are meaningful primarily regarding the practical questions of whether the limited securitization characteristics observable from public data capture banks' retention of the risk of their securitized loans *and* our research design (i.e., linear model specification and control variables) is sufficiently powerful to observe this risk retention. In this respect, our hypotheses can be viewed as providing *a priori* structure to a descriptive empirical analysis. We note that this point applies in some form to all the prior risk and value association studies summarized in Section III; for example, Bowman's (1980) finding that operating leases are risk-relevant depended on his ability to control for other sources of equity risk, not on the resolution of an economic tension.

Our first hypothesis pertains to the effect of the type of loan securitized. Stated in alternative form, this hypothesis is:

> **H1:** Banks' total equity risk is more positively associated with their off-balance sheet securitized loans when the loans have higher and less externally verifiable credit risk, all else being equal.

For reasons discussed in Section II, in testing H1 we assume that on average commercial loans have relatively high and difficult to verify credit risk, consumer loans have relatively high but easier to verify credit risk, and mortgages have relatively low and easy to verify credit risk.

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[12] In stating these conditions, we ignore the relatively infrequent cases of securitizations in which the risks of the interests sold to investors offset the risks of the interests retained by the issuer, since such offsetting risks need not pertain directly to the risks of the securitized assets. For example, we ignore mortgage securitizations that create (non-credit-enhancing) interest-only and principal-only strips, with one of the strips being sold and the other retained. The prepayment sensitivities of the two types of strip are strong and offsetting, and far in excess of the prepayment sensitivity of the mortgages.

Hypothesis 1 posits differences in banks' total retention of the risk of securitized loans across types of loan, not differences in the means by which they retain that risk. Accordingly, in testing this hypothesis we do not include on-balance sheet retained contractual interests in the empirical model.

Our second hypothesis pertains to the effect of retention of contractual retained interests. Stated in alternative form, this hypothesis is:

> **H2:** Banks' total equity risk is positively associated with the magnitude of their on-balance sheet contractual retained interests from securitizations of mortgage loans and commercial loans, all else being equal.

We exclude revolving consumer loans from H2 because, as discussed in Sections II and III, banks have the incentive and ability to provide and in practice do provide implicit recourse in securitizations of these loans, and because implicit recourse should be negatively correlated with the retention of contractual interests, all else being equal.

In testing H2, we use all securitized consumer loans to proxy for revolving securitized consumer loans. We do this to avoid having to tabulate and discuss regressions with distinct consumer loan variables in testing H2 versus our other hypotheses, which would add considerable length to the paper without adding any insights, because our results are very similar if we test H2 using revolving consumer loans. This reflects the fact that 90 percent (85 percent) of our sample banks' securitized consumer loans are revolving (credit card) loans.

Our third hypothesis pertains to the differential effects of types of contractual retained interests with different risk. Stated in alternative form, this hypothesis is:

> **H3:** Banks' total equity risk is more positively associated with their securitized loans when they retain contractual interests that more strongly concentrate the risk of the securitized loans, all else being equal.

For reasons discussed in Section II, in testing H3 we assume that credit-enhancing interest-only strips are more risk-concentrating than subordinated ABS, all else being equal.

While H2 and H3 pertain directly to our on-balance sheet contractual retained interest variables, in testing these hypotheses we include off-balance sheet securitized loans by type (i.e., the test variables in H1) in the empirical models. We expect banks' total equity risk to have a positive association with their securitized loans even when our retained interest variables are included in the model for three reasons. First, our retained interest variables only capture banks' risk retention through contractual means, not through implicit recourse, which is important for revolving consumer loans. Second, our retained interest variables do not fully capture banks' risk retention through contractual means; for example, they do not capture risk retention through servicing rights, recourse obligations, or subtler differences in retained ABS than we capture through our distinction of credit-enhancing interest-only strips and subordinated ABS. Third, banks incur operational risks and imperfectly variable operating costs (e.g., to staff retail networks to originate loans) that rise with the actual or expected volume of transactions in which they engage. While we include securitization income as an explanatory variable in the empirical model, and this variable may control for operational risk, this control likely is incomplete.

V. VARIABLES, SAMPLE, AND DESCRIPTIVE STATISTICS

Variables and Notation

We denote our measure of total equity risk and dependent variable, the standard deviation of daily returns for the quarter following the measurement of the securitization characteristics, by σ_R. We denote end-of-quarter off-balance sheet securitized loans by *MBS* for mortgages, by *CONSBS* for consumer loans, by *COMMBS* for commercial loans, and by *ABS* for all loans (i.e., *ABS*

= *MBS* + *CONSBS* + *COMMBS*). Since σ_R is scaled by owners' equity, we deflate these securitized loan variables by end-of-quarter owners' equity. We suppress this deflator in the notation.

Using the same initial letters as in the securitized loan balance variables but replacing the ending *BS* by *IO*, we denote the book value of on-balance sheet retained credit-enhancing interest-only strips by type of loan and summed across loan types by *MIO*, *CONSIO*, *COMMIO*, and *AIO*. Similarly, replacing the ending *BS* by *SABS*, we denote the book value of on-balance sheet retained subordinated *ABS* by type of loan and summed across loan types by *MSABS*, *CONSABS*, *COMMSABS*, and *ASABS*. Finally, replacing the ending *BS* by *RI*, we denote the sum of the book values of the two types of contractual retained interests by type of loan and summed across loan types by *MRI*, *CONSRI*, *COMMRI*, and *ARI* (e.g., *MRI* = *MIO* + *MSABS*). As before, all of the contractual retained interest variables by type of loans are deflated by owners' equity, and we suppress this deflator in the notation.

We include the following control variables in the empirical model. Reflecting Beaver et al.'s (1970) findings that earnings variability and asset growth are the most powerful accounting variables in explaining beta, we include the standard deviation of earnings per share over the prior six quarters, denoted σ_X, and the percentage growth in managed assets (the sum of on-balance sheet assets and off-balance sheet *ABS*) over the current quarter, denoted *MASSETG*, in the model. We expect these variables to be positively associated with σ_R.

A large body of prior research has examined the relationship between levels and changes in banks' regulatory capital and risk, with inconsistent results. These papers usually predict and sometimes find that banks with higher risk optimally choose to hold higher capital, although this relationship tends to break down for less-well-capitalized banks, some of which appear to gamble by holding riskier assets (Koehn and Santomero 1980; Shrieves and Dahl 1992; Kim and Santomero 1988; Furlong and Keeley 1989; Keeley and Furlong 1990; Aggarwal and Jacques 2001; Rime 2001; Dionne and Harchaoui 2003; Huang et al. 2005). As in most prior research, we use the Tier 1 risk-based capital ratio, denoted *CAP*, as the measure of regulatory capital, and we make no predictions about its association with σ_R.

Reflecting the findings of Flannery and James (1984a, 1984b), Avery and Berger (1991), Hassan et al. (1994), and Hall et al. (2001), we control for interest rate risk resulting from mismatching of the repricing characteristics of assets and liabilities using the absolute value of the difference of the book values of assets and liabilities expected to reprice in the next year divided by market value of equity, denoted *GAP*. Prior research finds that *GAP* is inconsistently associated with σ_R across years, although on average we expect this association to be positive.

We control for bank size using the logarithm of total assets, denoted *SIZE*, which Hall et al. (2001) show is negatively associated with σ_R. The coefficient on *SIZE* should rise with the average risk of banks' assets. We control for any differences in the risk of banks' various types of on-balance sheet loans using the book value of our three types of loans divided by owners' equity, denoted *MLOANS*, *CONSLOANS*, and *COMMLOANS*. These variables could be positively or negatively correlated with σ_R depending on various factors including banks' risk management guidelines and choices as to which of each of the three types of loans to hold versus securitize and how extensively they hedge the risks of the types of loans they hold. For example, of the loans they originate, banks often hold unhedged those with relatively low risk but sell, securitize, or hedge those with relatively high risk.

To control for variation of credit risk within each of our three types of securitized loans (e.g., prime versus subprime mortgages), we include nonperforming securitized loans divided by securitized loans outstanding for that type, denoted *MNPL*, *CONSNPL*, and *COMMNPL*. For the same reason, we also include net charge-offs of all securitized loans divided by total securitized loans, denoted *NCO*. We expect these credit risk variables to be positively associated with σ_R.

We include three variables to capture differences in banks' use of risk management products, technical sophistication, and dependence on securitization income. These variables are: the notional amount of interest rate derivatives[13] divided by the market value of owners' equity, denoted *DERIV*; trading income during the quarter divided by the market value of owners' equity, denoted *TRADINC*; and servicing fee and securitization income divided by the market value of owners' equity, denoted *SECINC*. We have no expectations for the coefficients on *DERIV* and *TRADINC*, because derivatives can be used for either hedging or speculation and because the risks of trading depend on the extent to which the bank matches trading positions and other factors. We expect the coefficient on *SECINC* to be positive if it captures the operational risks associated with securitizations incremental to our other securitization characteristics.

To control for bank liquidity, we include total (i.e., trading, available-for-sale, and held-to-maturity) securities minus *ARI* divided by total assets, denoted *SECUR*. We control for liquidity because one of banks' motivations for securitizations is to enhance liquidity (Karaoglu 2005), because higher liquidity should imply lower risk, all else being equal, and because higher risk banks should choose to be more liquid. Bank regulators use securities to assess one attribute of bank liquidity.[14] We deflate *SECUR* by total assets (not owners' equity, the deflator of most of the other variables), because that is how regulators assess bank liquidity. We also tried four other variables used by regulators to assess other attributes of liquidity (core deposits, total deposits, wholesale liabilities, and loan commitments, each divided by total assets); unlike *SECUR*, each of these variables was insignificant and had no significant effect on any model variable, and so was excluded from the tabulated results. We subtract *ARI* in the numerator of *SECUR* to ensure that that variable is not related by construction to our retained interest variables, but none of our inferences about any model variable is affected if we define *SECUR* as total securities divided by total assets. Because more liquidity could indicate either higher or lower risk, we make no prediction about the coefficient on *SECUR*.

We tried a number of refined and additional control variables that did not significantly improve the fit of the model or affect the coefficients on the other variables, and so they are not included in the tabulated results. In particular, we broke *MASSETG* and *NCO* down by type of loan, included nonperforming loans and loan charge-offs by type of on-balance sheet loan, included two proxies for the size of the bank's prepayment risky mortgage servicing rights (MSRs and servicing fees), and included a dummy variable for money center bank.

Data and Sample

We gather quarterly data from three sources. First, most of the variables are collected from the regulatory Y-9C reports that U.S. bank holding companies with total consolidated assets of $150 million or more must file quarterly with the Federal Reserve. The size cutoff for filing these reports is not important for our study, because small banks invariably do not conduct securitizations. Our main test variables—securitized loans by type of loan and retained interests by type of interest and type of loan—are collected from schedule HC-S, *Servicing, Securitization and Asset Sale Activities*, of these reports. Schedule HC-S was first provided in Y-9C reports in the second quarter of 2001. Compared to financial report data, schedule HC-S data are far more standardized and detailed with respect to our securitization characteristics; in fact, for virtually all banks it would not be possible to observe many of these variables from financial report data.

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[13] We use the notional amount of only interest rate derivatives because very few banks have other derivatives. The results are substantially unaffected if we use the notional amount of all derivatives.

[14] For example, see FDIC Outlook: An Assessment of Traditional Liquidity Ratios, at http://www.fdic.gov/bank/analytical/regional/ro20063q/na/2006_fall02.html.

Schedule HC-S provides these data for seven types of loans: 1–4 family residential mortgages, credit card receivables, home equity lines of credit, automobile loans, other consumer loans, commercial and industrial loans, and all other loans, leases, and assets (the last type includes CDO resecuritizations of asset-backed securities, not loans). To ensure that an appreciable number of sample banks securitize each type of loan and for expositional simplicity since some of the economic differences across loan types are subtle (e.g., credit card receivables and home equity lines of credit are substitutable types of revolving consumer loan), we aggregate the data provided for these seven types of securitized loans into three categories: mortgages (1–4 family residential mortgages), consumer loans (credit card receivables, home equity lines of credit, automobile loans, and other consumer loans), and commercial loans (commercial and industrial loans and all other loans, leases, and assets).[15] We also collect the control variables *MASSETG*, *CAP*, *GAP*, *SIZE*, *MNPL*, *CONSNPL*, *COMMNPL*, *NCO*, *DERIV*, *TRADINC*, *SECINC*, and *SECUR* from the Y-9C reports.

Second, we collect daily returns necessary to estimate σ_R from CRSP. Third, we collect quarterly earnings per share necessary to estimate σ_X from Bank Compustat.

We collected the variables described above from the second quarter of 2001 (when schedule HC-S first became available) to the fourth quarter of 2006, and matched the Y-9C, CRSP, and Compustat data. Our sample includes securitization characteristics for the 21 quarters from the third quarter of 2001 to the third quarter of 2006. We lose the second quarter of 2001 in the calculation of *MASSETG* and the fourth quarter of 2006 because the dependent variable in Equation (1), the standard deviation of returns, is measured one quarter after the securitization characteristics.

To mitigate selection issues, our sample only includes observations for the 54 banks that demonstrated an ongoing willingness to engage in securitizations during our sample period, as reflected by positive *ABS* in six or more of the 21 quarters. We included these banks for all of the quarters they have available data, however, so that 22 percent of our 1110 bank-quarter observations have zero *ABS*. To mitigate the effect of outliers, we winsorize observations in the outside 1 percent of each tail of each variable in Equation (1), excepting the lower tail of the variables that are bounded below by zero and have some zero observations. Our results are substantially unaffected if we do not winsorize outliers of the dependent variable, if we delete rather than winsorize outliers, and if we make the winsorization/deletion rule more or less stringent within commonly applied levels as long as extreme outliers are pulled in or deleted (e.g., 2.5 percent and 0.5 percent winsorization rules yield similar results).

Descriptive Statistics

Table 1, Panel A reports means and quartiles for the winsorized variables in Equation (1) for the full sample. There is considerable variation on all the variables across the sample. All of the securitization characteristics are bounded below by zero and right-skewed. These distributions reflect economically important aspects of securitizations and so in our primary analyses we winsorize the securitization characteristics in the same fashion as the other model variables. In

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[15] It is not possible to observe the composition of securitized all other loans, leases, and assets from regulatory Y-9C filings, in particular, what portion is attributable to CDO resecuritizations of securities. We include securitized all other loans, leases, and assets in securitized commercial loans because we expect their credit risks to be similarly high and difficult for external investors to verify. Securitized all other loans, leases, and assets are zero for almost 80 percent of the sample observations and on average are 20.7 percent of our securitized commercial loans variable. Our results for securitized commercial loans are not qualitatively affected by the inclusion of securitized all other loans, leases, and assets.

TABLE 1

Descriptive Statistics
Full Sample and Subsamples with Nonzero Securitizations by Loan Type

Panel A: Full Sample (1110 observations)

	Mean	Min.	25%	Med.	75%	Max.
σ_R	1.4801	0.6221	1.0417	1.3377	1.7694	3.6500
MBS	0.3266	0.0000	0.0000	0.0041	0.2397	5.3636
CONSBS	0.0931	0.0000	0.0000	0.0000	0.0333	4.0666
COMMBS	0.0514	0.0000	0.0000	0.0000	0.0214	1.4170
ABS	0.4710	0.0000	0.0038	0.1020	0.5885	5.4642
MRI	0.0132	0.0000	0.0000	0.0000	0.0006	0.5296
MIO	0.0040	0.0000	0.0000	0.0000	0.0000	0.4765
MSABS	0.0092	0.0000	0.0000	0.0000	0.0002	0.5134
CONSRI	0.0058	0.0000	0.0000	0.0000	0.0020	0.2208
CONSIO	0.0021	0.0000	0.0000	0.0000	0.0009	0.0733
CONSSABS	0.0037	0.0000	0.0000	0.0000	0.0000	0.2021
COMMRI	0.0031	0.0000	0.0000	0.0000	0.0000	0.1816
COMMIO	0.0008	0.0000	0.0000	0.0000	0.0000	0.0810
COMMSABS	0.0023	0.0000	0.0000	0.0000	0.0000	0.1756
ARI	0.0220	0.0000	0.0000	0.0010	0.0100	0.5925
AIO	0.0069	0.0000	0.0000	0.0000	0.0023	0.5498
ASABS	0.0151	0.0000	0.0000	0.0000	0.0054	0.5134
MASSETG	1.0226	0.8801	0.9980	1.0157	1.0383	1.2586
MLOANS	0.8268	0.0000	0.4686	0.7523	1.0786	2.9674
CONSLOANS	0.6511	0.0032	0.3318	0.6405	0.9292	1.5452
COMMLOANS	2.2011	0.1093	1.4930	2.0645	2.7995	5.7514
CAP	10.5575	7.0400	8.5200	10.1750	11.9500	18.6600
SIZE	7.1371	5.5332	6.5376	7.1482	7.7369	9.1451
σ_X	0.0998	0.0094	0.0306	0.0590	0.1215	0.6382
GAP	1.0494	0.0069	0.4012	0.9171	1.4984	4.1699
NCO	0.0017	−0.0637	0.0000	0.0000	0.0008	0.0618
MNPL	0.0191	0.0000	0.0000	0.0000	0.0240	0.3868
CONSNPL	0.0156	0.0000	0.0000	0.0000	0.0174	0.1690
COMMNPL	0.0031	0.0000	0.0000	0.0000	0.0000	0.1125
DERIV	7.6691	0.0000	0.0241	0.3953	1.5929	117.4870
TRADINC	0.0009	−0.0021	0.0000	0.0000	0.0008	0.0139
SECINC	0.0029	−0.0181	0.0000	0.0003	0.0022	0.0610
SECUR	0.2429	0.0038	0.1797	0.2298	0.3023	0.5886

(continued on next page)

TABLE 1 (continued)

Panel B: Non-Zero *ABS* Observations (78% of observations)

	Mean	**Min.**	**25%**	**Med.**	**75%**	**Max.**
ABS	0.6030	0.0001	0.0541	0.1947	0.7775	5.4642
ARI	0.0282	0.0000	0.0000	0.0030	0.0235	0.5925
AIO	0.0089	0.0000	0.0000	0.0001	0.0041	0.5498
ASABS	0.0193	0.0000	0.0000	0.0009	0.0098	0.5134
ARI (deflated by *ABS*)	0.1076	0.0000	0.0000	0.0227	0.0791	1.0116
AIO (deflated by *ABS*)	0.0200	0.0000	0.0000	0.0001	0.0152	0.5737
ASABS (deflated by *ABS*)	0.0876	0.0000	0.0000	0.0046	0.0446	1.0116

Panel C: Non-Zero *MBS* Observations (56% of observations)

	Mean	**Min.**	**25%**	**Med.**	**75%**	**Max.**
MBS	0.5828	0.0001	0.0223	0.1605	0.7035	5.3636
MRI	0.0236	0.0000	0.0000	0.0003	0.0055	0.5296
MIO	0.0072	0.0000	0.0000	0.0000	0.0001	0.4765
MSABS	0.0164	0.0000	0.0000	0.0000	0.0024	0.5134
MRI (deflated by *MBS*)	0.0879	0.0000	0.0000	0.0010	0.0802	1.0000
MIO (deflated by *MBS*)	0.0107	0.0000	0.0000	0.0000	0.0004	0.5737
MSABS (deflated by *MBS*)	0.0772	0.0000	0.0000	0.0000	0.0398	1.0000

Panel D: Non-Zero *CONSBS* Observations (36% of observations)

	Mean	**Min.**	**25%**	**Med.**	**75%**	**Max.**
CONSBS	0.2589	0.0000	0.0252	0.0810	0.2282	4.0666
CONSRI	0.0160	0.0000	0.0014	0.0039	0.0149	0.2208
CONSIO	0.0058	0.0000	0.0006	0.0020	0.0049	0.0733
CONSSABS	0.0102	0.0000	0.0000	0.0011	0.0085	0.2021
CONSRI (deflated by *CONSBS*)	0.0858	0.0000	0.0336	0.0524	0.0882	0.7892
CONSIO (deflated by *CONSBS*)	0.0442	0.0000	0.0080	0.0195	0.0490	0.4915

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TABLE 1 (continued)

Panel D: Non-Zero *CONSBS* Observations (36% of observations)

	Mean	Min.	25%	Med.	75%	Max.
CONSSABS (deflated by *CONSBS*)	0.0416	0.0000	0.0000	0.0216	0.0428	0.5526

Panel E: Non-Zero *COMMBS* Observations (33% of observations)

	Mean	Min.	25%	Med.	75%	Max.
COMMBS	0.1562	0.0002	0.0228	0.0861	0.1815	1.4170
COMMRI	0.0093	0.0000	0.0000	0.0006	0.0037	0.1816
COMMIO	0.0024	0.0000	0.0000	0.0000	0.0006	0.0810
COMMSABS	0.0069	0.0000	0.0000	0.0003	0.0020	0.1756
COMMRI (deflated by *COMMBS*)	0.1246	0.0000	0.0001	0.0166	0.0732	1.0116
COMMIO (deflated by *COMMBS*)	0.0092	0.0000	0.0000	0.0000	0.0047	0.2111
COMMSABS (deflated by *COMMBS*)	0.1154	0.0000	0.0000	0.0081	0.0645	1.0116

Panel A reports descriptive statistics for all the variables in Equation (1) for the full sample. Panels B–E report descriptive statistics for the securitized loan and retained interest variables for observations with nonzero securitizations of all loans, mortgages, consumer loans, and commercial loans, respectively. In Panels B–E, the retained interest variables are deflated both by owners' equity, as in Equation (1), and by the corresponding type of securitized loans, to illustrate their relative size clearly.

The variables were collected and calculated from quarterly regulatory Y-9C filings (most variables), quarterly Compustat (σ_X only), and daily CRSP (σ_R only) from the second quarter of 2001 to the fourth quarter of 2006. The first and last quarters were lost due to the calculation of *MASSETG* and because σ_R is measured one quarter after the other variables, respectively. The full sample includes 54 banks with at least six quarters of outstanding *ABS* during the 21 quarters from the third quarter of 2001 to the third quarter of 2006 and 1110 total bank-quarter observations.

The extreme 1 percent of each tail of each variable in Equation (1) is winsorized, excepting the lower tail of variables that are bounded below by zero and have some zero observations. The descriptive statistics are for the winsorized variables.

supplemental analyses, we pull in large values of securitization characteristics using stronger winsorization rules than for the other model variables (2.5 percent and 5 percent).

The sample banks are all fairly large (e.g., the minimum total assets is over $1.2 billion) and well capitalized (e.g., the minimum of *CAP* is 7.04 percent, well above the 6 percent threshold for a bank to be well-capitalized). Their on-balance sheet loan portfolios are tilted toward commercial loans (e.g., the mean of *COMMLOANS* is 220 percent of owners' equity, several multiples of the mean *MLOANS* of 83 percent and the mean *CONSLOANS* of 65 percent). This primarily reflects the fact that the sample comprises large commercial banks for which commercial entities are the primary borrowers. It also reflects the fact that banks securitize a higher percentage of their mortgages and consumer loans, as discussed below.

The mean of *ABS* is an appreciable 47 percent of owners' equity, indicating that securitizations are important to the average sample bank. Of this percentage, 33 percent is due to securitized mortgages (*MBS*), 9 percent is due to securitized consumer loans (*CONSBS*), and 5 percent is due to securitized commercial loans (*COMMBS*). Given that the sample banks' on-balance sheet loan portfolios tilt toward commercial loans, these percentages reflect banks' greater use of securitization for more homogeneous/standardized loan types. The maximum of *ABS* is 546 percent, of *MBS* is 536 percent, of *CONSBS* is 407 percent, and of *COMMBS* is 142 percent. Hence, securitization is of paramount importance for some of the sample banks.

Table 1, Panels B through E report descriptive statistics for the securitized loan and contractual retained interest variables in Equation (1) for the observations with nonzero *ABS* (78 percent of the sample), nonzero *MBS* (56 percent of the sample), nonzero *CONSBS* (36 percent of the sample), and nonzero *COMMBS* (33 percent of the sample), respectively. Statistics are provided for the retained interest variables deflated both by owners' equity, as the variables appear in Equation (1), and by the amount of the corresponding type of securitized loans, which more cleanly indicates the relative size of retained interests. The securitization characteristics remain right-skewed after eliminating observations with zero securitizations.

For the observations with nonzero *ABS*, mean *ABS* is 60 percent of owners' equity. Mean *ARI* as a percentage of *ABS* is 11 percent, indicating that on average issuers retain a sizeable first-loss position in the securitized loans. Of that mean *ARI*, 2 percent is attributable to *AIO* and 9 percent is attributable to *ASABS*. Hence, on average across types of loan securitizations subordinated ABS are over four times credit-enhancing interest-only strips.

The amount of securitized loans and the size and composition of contractual retained interests differ across loan types, however. We first indicate the means of these variables for each loan type and then discuss and explain the results of tests of differences in the mean size and composition of contractual retained interests across loan types. For the observations with nonzero *MBS*, mean *MBS* is a sizeable 58 percent of owners' equity. Mean *MRI* as a percent of *MBS* is 9 percent, a somewhat lower retention of retained interests than the 11 percent in all securitizations. Of that mean *MRI*, 8 percent is attributable to *MSABS* and 1 percent to *MIO*, a fairly similar composition of retained interests as for all securitizations. For the observations with nonzero *CONSBS*, mean *CONSBS* is 26 percent of owners' equity, less than half of mean *MBS*. Mean *CONSRI* as a percentage of *CONSBS* is also somewhat low at 9 percent. That mean *CONSRI* is split fairly evenly between *CONSIO* (4 percent) and *CONSSABS* (4 percent), a much higher percentage of credit-enhancing interest-only strips than for all securitizations. For the observations with nonzero *COMMBS*, mean *COMMBS* is only 16 percent of owners' equity, again reflecting banks' lesser use of securitization for this most heterogeneous loan type. Mean *COMMRI* as a percentage of *COMMBS* is 12 percent, a somewhat higher retention of retained interests than in all securitizations. Of that mean *COMMSRI*, 12 percent is attributable to *COMMSABS* and only 1 percent to *COMMIO*, a higher percentage of subordinated *ABS* than for all securitizations.

Table 2 reports t-statistics for the differences across types of securitized loans in the means of retained interests in total and by type deflated by the amount of the corresponding type of securitized loans. Mean *COMMRI* is significantly larger than both mean *MRI* ($t = 2.3$) and mean *CONSRI* ($t = 2.6$), consistent with our argument that commercial loans have higher and less externally verifiable credit risk than the other loan types, so that issuers in commercial loan securitizations need to retain larger first-loss positions. Despite our argument that consumer loans have higher and less externally verifiable credit risk than mortgages, but consistent with our argument that issuers in consumer loan securitizations retain risk by providing implicit recourse, mean *MRI* and mean *CONSRI* are insignificantly different. Mean *CONSIO* is significantly larger than mean *MIO* ($t = 8.8$) and mean *COMMIO* ($t = 10.1$), reflecting the higher yield on consumer loans than on other loan types, which gives rise to a larger excess spread that is received by

TABLE 2
t-Tests of Differences of the Means of Retained Interests by Type of Interest for Loan Type Pairs
Means Calculated for Subsamples with Nonzero Securitizations by Loan Type

		Type of Retained Interest		
		RI	***IO***	***SABS***
Loan Type Comparisons	*M* versus *CONS*	0.2	**−8.8**	**4.0**
	M versus *COMM*	−2.3	0.6	−2.4
	CONS versus *COMM*	−2.6	**10.1**	**−5.2**

t-statistics significant at the 5 percent level in a two-tailed test are in boldface.

The cells of the table report the t-statistics for the differences of the means of three types of retained interests (*RI* denotes total retained interests, *IO* denotes credit-enhancing interest-only strips, and *SABS* denotes subordinated *ABS*) for the possible pairings of types of loan securitization (*M* denotes 1–4 family residential mortgages, *CONS* denotes consumer loans, and *COMM* denotes commercial loans). Retained interests are divided by the corresponding type of securitized loans, not by the market value of owners' equity. For example, the t-statistic in the upper left cell pertains to the difference of the mean of total retained interests for mortgage securitizations divided by *MBS* and the mean of total retained interests for consumer loans divided by *CONSBS*.

The means of the retained interests for each loan type are calculated for the subsamples with nonzero securitizations of that type.

credit-enhancing interest-only strips. Mean *COMMSABS* is significantly larger than mean *MSABS* ($t = 2.4$) and mean *CONSSABS* ($t = 5.2$), and mean *MSABS* is significantly larger than mean *CONSABS* ($t = 4.0$), again consistent with our argument that commercial loans have higher and less externally verifiable credit risk than the other loan types.

Table 3 reports the Pearson and Spearman correlations of the variables other than the retained interest variables in Equation (1). We discuss only the Pearson correlations. σ_R is significantly positively correlated with *ABS*, *MBS*, and *CONSBS*, consistent with banks retaining some of the risk of their off-balance sheet loans. The correlations of σ_R with the control variables generally are as expected, with the exception of its significantly negative correlations with *GAP* and *MNPL*. σ_R is significantly positively correlated with *SECINC*, consistent with that variable capturing some of the operational risks involved in securitizations. σ_R is also significantly positively correlated with *SECUR*, consistent with riskier banks choosing to hold securities to enhance liquidity.

Not surprisingly, each type of off-balance sheet securitized loans is significantly positively correlated with the corresponding type of on-balance sheet loans. *ABS* and each type of securitized loan are significantly positively correlated with *DERIV*, likely reflecting differences across banks in the extent to which they engage in various types of sophisticated financial transactions. *DERIV* and *TRADINC* are very highly positively correlated with each other and with *SIZE*, likely for the same reason. *CONSBS* has a very high positive correlation with *SECINC*, reflecting the larger servicing fees and other income banks receive from securitized consumer loans compared to other securitized loans.

VI. REGRESSION ANALYSES

Empirical Model and Restatement of Hypotheses as Coefficient Restrictions

In our most disaggregated empirical model, we regress σ_R on the three types of securitized loans (i.e., *MBS*, *CONSBS*, and *COMMBS*) and on the two retained interest variables for the three

TABLE 3

Correlations: Full Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
σ_R	1	0.00	**−0.11**	**−0.11**	0.03	0.00	0.04	**−0.08**	**0.09**	**0.28**	**−0.37**	**0.06**	**−0.20**	−0.04	**−0.17**	**−0.13**	**−0.08**	**−0.29**	**−0.18**	**−0.07**	**0.16**
MBS	**0.07**	1	**0.15**	**0.06**	**0.73**	**0.11**	**0.36**	**0.20**	**−0.06**	**−0.15**	**0.12**	**0.08**	**0.17**	**0.14**	**0.63**	**0.17**	**0.10**	**0.18**	**0.17**	**0.15**	0.05
CONSBS	**0.12**	−0.03	1	**0.24**	**0.48**	**0.08**	**0.06**	**0.24**	**−0.19**	**−0.39**	**0.53**	**0.31**	**0.11**	**0.68**	**0.37**	**0.93**	**0.42**	**0.60**	**0.36**	**0.36**	**−0.23**
COMMBS	0.03	**−0.07**	0.00	1	**0.42**	**0.08**	**−0.14**	**−0.11**	**−0.21**	**−0.27**	**0.40**	**0.18**	**0.17**	**0.17**	**0.18**	**0.26**	**0.78**	**0.35**	**0.37**	**0.30**	−0.01
ABS	**0.12**	**0.88**	**0.42**	**0.11**	1	**0.11**	**0.28**	**0.24**	**−0.08**	**−0.22**	**0.27**	**0.16**	**0.13**	**0.41**	**0.45**	**0.48**	**0.42**	**0.31**	**0.24**	**0.40**	**−0.15**
MASSETG	−0.02	**0.06**	0.01	0.01	**0.06**	1	−0.02	−0.03	−0.03	**−0.15**	**0.15**	**−0.06**	0.00	0.00	**0.08**	**0.09**	0.05	**0.09**	**0.11**	0.00	0.01
MLOANS	**0.06**	**0.35**	**−0.15**	0.01	**0.25**	−0.02	1	**0.46**	**0.24**	−0.04	**−0.24**	**−0.11**	**0.21**	**0.09**	**0.21**	**0.09**	**−0.07**	−0.05	**−0.23**	**0.12**	**−0.21**
CONSLOANS	−0.04	**0.21**	**0.18**	**−0.10**	**0.25**	−0.03	**0.44**	1	0.00	**−0.20**	0.04	−0.04	**0.09**	**0.29**	**0.20**	**0.25**	−0.02	**0.16**	−0.02	**0.18**	**−0.23**
COMMLOANS	**0.09**	**0.07**	**−0.24**	**0.12**	−0.02	−0.02	**0.30**	−0.01	1	0.00	**−0.50**	−0.06	**0.17**	**−0.17**	**−0.23**	**−0.22**	**−0.22**	**−0.27**	**−0.34**	−0.04	**−0.31**
CAP	**0.24**	**−0.10**	**0.26**	**−0.14**	0.00	**−0.12**	**−0.07**	**−0.19**	**−0.08**	1	**−0.59**	**−0.10**	**−0.29**	**−0.31**	**−0.33**	**−0.42**	**−0.26**	**−0.60**	**−0.45**	**−0.15**	**0.37**
SIZE	**−0.27**	0.04	**0.21**	**0.15**	**0.15**	**0.10**	**−0.22**	**0.06**	**−0.47**	**−0.52**	1	**0.20**	**0.27**	**0.39**	**0.44**	**0.54**	**0.42**	**0.81**	**0.65**	**0.22**	**−0.09**
σ_X	**0.14**	0.05	**0.06**	0.05	**0.08**	−0.05	0.03	−0.02	−0.03	**−0.12**	**0.18**	1	0.05	**0.21**	**0.17**	**0.30**	**0.25**	**0.22**	**0.25**	**0.11**	0.02
GAP	**−0.13**	**0.13**	**−0.09**	**0.06**	**0.09**	0.00	**0.26**	**0.10**	**0.27**	**−0.24**	**0.19**	0.04	1	**0.08**	**0.26**	**0.12**	**0.17**	**0.34**	**0.18**	**0.08**	**−0.17**
NCO	**0.08**	−0.03	**0.30**	0.00	**0.11**	0.06	**0.09**	**0.14**	**−0.08**	−0.02	**0.14**	**0.13**	−0.02	1	**0.38**	**0.60**	**0.34**	**0.42**	**0.23**	**0.24**	**−0.21**
MNPL	**−0.10**	**0.10**	0.02	0.04	**0.10**	0.02	**0.29**	**0.15**	**−0.09**	**−0.23**	**0.29**	**0.12**	**0.22**	**0.21**	1	**0.35**	**0.20**	**0.45**	**0.28**	**0.14**	**−0.12**
CONSNPL	−0.05	**0.23**	**0.22**	0.03	**0.31**	0.03	**0.13**	**0.24**	**−0.12**	**−0.23**	**0.36**	**0.24**	**0.09**	**0.25**	**0.15**	1	**0.42**	**0.60**	**0.40**	**0.35**	**−0.25**
COMMNPL	**0.06**	0.03	**0.32**	**0.38**	**0.24**	−0.04	−0.06	−0.02	0.03	0.01	**0.14**	**0.13**	0.04	**0.15**	−0.03	**0.08**	1	**0.39**	**0.33**	**0.41**	−0.02
DERIV	−0.05	**0.07**	**0.18**	**0.14**	**0.17**	**0.07**	0.05	**0.18**	**−0.18**	**−0.28**	**0.55**	**0.27**	**0.16**	**0.15**	**0.26**	**0.25**	**0.12**	1	**0.64**	**0.23**	**−0.15**
TRADINC	−0.02	0.04	**0.12**	0.05	**0.10**	0.03	**−0.17**	−0.02	**−0.29**	**−0.19**	**0.49**	**0.33**	0.04	**0.09**	**0.09**	**0.19**	**0.10**	**0.61**	1	**0.13**	0.04
SECINC	**0.10**	0.03	**0.61**	**0.08**	**0.31**	0.03	−0.01	**0.13**	**−0.13**	**0.15**	**0.12**	**0.13**	**−0.08**	**0.20**	0.04	**0.24**	**0.29**	**0.13**	0.05	1	**−0.09**
SECUR	**0.11**	**−0.06**	**−0.27**	**−0.06**	**−0.19**	0.05	**−0.27**	**−0.30**	**−0.28**	**0.31**	**−0.07**	0.01	**−0.19**	**−0.23**	**−0.24**	**−0.26**	**−0.11**	**0.11**	**0.22**	**0.23**	1

Correlations significant at the 5 percent level in a two-tailed test are in boldface.

Pearson (Spearman) correlations of the winsorized variables for the full sample are reported below (above) the diagonal.

The sample and winsorization rule are described in the notes to Table 1. The variables are defined in the Appendix.

loan types (i.e., *MIO*, *MSABS*, *CONSIO*, *CONSSABS*, *COMMIO*, and *COMMSABS*). This model, adding a placeholder for the linear function of the control variables discussed above, is:

$$\begin{aligned}\sigma_R = {} & \alpha + \gamma_M MBS + \lambda_M MIO + \mu_M MSABS + \gamma_{CONS} CONSBS + \lambda_{CONS} CONSIO \\ & + \mu_{CONS} CONSSABS + \gamma_{COMM} COMMBS + \lambda_{COMM} COMMIO + \mu_{COMM} COMMSABS \\ & + f(\text{control variables}). \qquad (1)\end{aligned}$$

We also estimate various nested versions of Equation (1) including *ABS* instead of the securitized loans by type and/or no or total retained interests instead of retained interest by type. We do this in part to test our hypotheses, as discussed in Section IV, and in part to demonstrate how our results differ from those of prior studies that do not distinguish the characteristics of securitizations.

We emphasize that Equation (1) is linear, not multiplicatively linear as Hamada's (1972) analysis implies. In particular, we do not interact unlevered standard deviation of returns with our securitization characteristics, primarily because any attempt to deleverage this variable would yield considerable measurement error. Instead, we rely upon the extensive set of control variables described in Section V to capture differences in unlevered total equity risk across observations.

In testing H1, we expect the γ coefficients on securitized loans to be more positive for loan types with higher and/or less externally verifiable credit risk, i.e., $\gamma_{COMM} > \gamma_{CONS} > \gamma_M > 0$. In testing H2, we expect the λ and μ coefficients on retained interests to be positive for mortgages and commercial loans, but we make no prediction about these coefficients for revolving consumer loans due to the importance of implicit recourse in securitizations of those loans. In testing H3, we expect the λ coefficients on the more risk-concentrating credit-enhancing interest-only strips to be more positive than the μ coefficients on subordinated ABS for the same loan type, i.e., $\lambda_M > \mu_M$ and $\lambda_{COMM} > \mu_{COMM}$. We expect corresponding coefficient differences in the nested versions of Equation (1).

Primary Regression Analyses

Table 4 reports the results of OLS estimation of three nested and the unconstrained versions of Equation (1). Because our panel data exhibit cross-sectional and time-series dependence, we report t-statistics for the coefficients that are calculated using firm- and time-clustered standard errors (Petersen 2007).

The first column of the table reports the results of the model with *ABS* and the control variables only. This model is most analogous to those in prior research examining the risk-relevance of securitizations that does not distinguish the characteristics of securitizations, and it has an adjusted R^2 of 16.9 percent. The coefficient on *ABS* is significantly positive ($t = 2.9$), consistent with prior findings that issuers' risk is positively associated with their off-balance sheet securitized assets.

The coefficients on the control variables, where significant, are as expected. Specifically, the coefficient on *SIZE* is significantly negative ($t = -3.1$) and the coefficients on σ_X and *NCO* are significantly positive ($t = 2.5$ and 3.0, respectively). All of the other control variables are insignificant. None of our results is substantially affected by the elimination of insignificant control variables.

With two exceptions, the coefficients on the control variables do not change much as the securitization characteristics are incorporated in to the model. First, the coefficient on *NCO* declines by about half moving from the most to least restrictive model in Table 4, suggesting the addition of the securitization characteristics captures some of the effect of the credit losses on the securitized loans. Second, the coefficient on *SECUR* almost doubles and become (increasingly)

TABLE 4

OLS Estimation with Time and Firm Clustered Standard Errors of Nested and Unconstrained Versions of Equation (1)

$$\sigma_R = \alpha + \gamma_M MBS + \lambda_M MIO + \mu_M MSABS + \gamma_{CONS} CONSBS + \lambda_{CONS} CONSIO + \mu_{CONS} CONSSABS$$
$$+ \gamma_{COMM} COMMBS + \lambda_{COMM} COMMIO + \mu_{COMM} COMMSABS + f(\text{control variables}) \quad (1)$$

Variable (Predicted Sign)	Securitized Loans and Control Variables Only	Distinguishing Types of Securitized Loans	Adding Total Retained Interests	Distinguishing Types of Retained Interests
Intercept (?)	**2.75**	**2.92**	**2.95**	**2.31**
	(3.3)	**(3.4)**	**(3.4)**	**(3.0)**
ABS (+)	**0.12**			
	(2.9)			
MBS (+)		**0.10**	**0.09**	**0.07**
		(2.5)	**(2.5)**	**(2.1)**
MRI (+)			1.07	
			(1.0)	
MIO (+)				**4.85**
				(5.5)
MSABS (+)				−0.24
				(−0.3)
CONSBS (+)		**0.32**	**0.57**	**0.67**
		(2.8)	**(2.5)**	**(3.0)**
CONSRI (+)			−4.71	
			(−1.1)	
CONSIO (+)				2.03
				(0.3)
CONSSABS (+)				−10.70
				(−1.5)
COMMBS (+)		0.34	−0.10	−0.13
		(1.3)	(−0.5)	(−0.7)
COMMRI (+)			**11.99**	
			(3.1)	
COMMIO (+)				**44.30**
				(2.4)
COMMSABS (+)				1.26
				(1.5)
MASSETG (+)	0.07	0.03	0.10	0.15
	(0.2)	(0.1)	(0.2)	(0.3)
MLOANS (?)	−0.01	0.02	0.01	0.04
	(−0.1)	(0.2)	(0.1)	(0.5)

(continued on next page)

TABLE 4 (continued)

Variable (Predicted Sign)	**Securitized Loans and Control Variables Only**	**Distinguishing Types of Securitized Loans**	**Adding Total Retained Interests**	**Distinguishing Types of Retained Interests**
CONSLOANS (?)	−0.06	−0.07	−0.07	−0.08
	(−0.7)	(−0.8)	(−0.9)	(−0.9)
COMMLOANS (?)	0.00	0.01	0.00	0.02
	(0.1)	(0.1)	(0.1)	(0.4)
CAP (?)	0.01	0.00	−0.01	0.00
	(0.4)	(−0.2)	(−0.3)	(0.1)
SIZE (−)	**−0.23**	**−0.25**	**−0.26**	**−0.20**
	(−3.1)	**(−3.3)**	**(−3.5)**	**(−2.8)**
σ_X (+)	**0.81**	**0.83**	**0.79**	**0.68**
	(2.5)	**(2.6)**	**(2.6)**	**(2.2)**
GAP (+)	−0.03	−0.03	−0.04	−0.05
	(−0.9)	(−0.8)	(−1.1)	(−1.5)
NCO (+)	**15.97**	**13.83**	**11.61**	**7.92**
	(3.0)	**(2.8)**	**(2.8)**	**(2.5)**
MNPLS (+)	−0.48	−0.38	−0.38	−0.02
	(−0.7)	(−0.6)	(−0.5)	(−0.0)
CONSNPLS (+)	−0.40	−0.28	0.29	0.01
	(−0.5)	(−0.3)	(0.4)	(0.0)
COMMNPLS (+)	1.54	−0.54	−1.72	−2.35
	(0.3)	(−0.1)	(−0.4)	(−0.5)
DERIV (?)	0.00	0.00	0.00	0.00
	(1.1)	(0.6)	(1.5)	(1.1)
TRADINC (?)	6.52	7.35	3.28	3.95
	(0.5)	(0.5)	(0.2)	(0.3)
SECINC (+)	3.24	1.08	0.81	0.88
	(1.2)	(0.5)	(0.3)	(0.4)
SECUR (?)	0.60	**0.81**	**0.96**	**1.12**
	(1.8)	**(2.1)**	**(2.7)**	**(3.0)**
Adjusted R^2	0.169	0.172	0.202	0.226
# Observations	1110	1110	1110	1110
F-statistic for each successive expansion of the model	—	**2.93**	**14.48**	**12.03**
		(2,1090)	**(3,1087)**	**(3,1084)**
F-statistic for total expansion of the model	—	—	**9.90**	**10.89**
			(5,1087)	**(8,1084)**

(continued on next page)

TABLE 4 (continued)

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t-statistics calculated using firm and time clustered standard errors (see Petersen 2007) are in parentheses underneath coefficients. t-statistics significant at the 5 percent level in a one-tailed test if the coefficient has the predicted sign and a two-tailed test otherwise are in boldface.

F-statistics are reported for each successive expansion of the model (i.e., from the model reported in the column on the immediate left) and for the total expansion of the model (i.e., from the model reported in the first column). Degrees of freedom in the numerator and denominator are reported in parentheses under the F-statistics. F-statistics significant at the 5 percent level are in boldface.

The table reports the OLS estimation and t-statistics calculated using firm and time clustered standard errors of three nested (columns 1–3) and the unconstrained (column 4) versions of Equation (1). The first column reports the result of the most constrained model that includes the control variables and total securitized loans (*ABS*) only. The second column reports the estimation of the expanded model that decomposes *ABS* into securitized loans by type of loan (*MBS*, *CONSBS*, and *COMMBS*), and it is used to test H1. The third column reports the estimation of the further expanded model that adds total retained interests by type of loan (*MRI*, *CONSRI*, and *COMMRI*), and it is used to test H2. The fourth column reports the estimation of the most expanded/unconstrained model that breaks total retained interests by type of loan into and retained interests by type of interest and by type of loan (e.g., *MRI* into *MIO* and *MSABS*), and it is used to test H3.

The sample and winsorization rule are described in the notes to Table 1. The variables are defined in the Appendix.

significant moving from the most to least restrictive model. The inclusion of *SECUR* in the model noticeably reduces the coefficient on *COMMBS* and significantly reduces the coefficients on *COMMRI*, *COMMIO*, and *COMMSABS* in the less restricted models, presumably because larger banks are more likely to securitize commercial loans and also tend to hold more and riskier securities. Because of the stability of the coefficients on the control variables across models, we do not discuss them further.

We test H1 using the model reported in the second column of Table 4, which expands the model reported in the first column by breaking ABS down by type of securitized loans into *MBS*, *CONSBS*, and *COMMBS*. This expansion of the model raises the adjusted R^2 by 0.3 percent to 17.2 percent and yields a significant F-statistic of 2.9 with 2 and 1090 degrees of freedom, consistent with different types of securitized loans having different risk-relevance. The coefficients on *MBS* and *CONSBS* are significantly positive, with $t = 2.5$ and 2.8, respectively, while the coefficient on *COMMBS* is significantly positive only at the 10 percent level, with $t = 1.3$. The signs of the differences of the coefficients are all consistent with H1, however only the difference of the coefficients on *CONSBS* and *MBS* is significant ($t = 1.9$).

We test H2 using the model reported in the third column of Table 4, which expands the model reported in the second column by adding the total contractual retained interest variables *MRI*, *CONSRI*, and *COMMRI*. This expansion of the model raises the adjusted R^2 by 3.0 percent to 20.2 percent and yields a significant F-statistic of 14.5 with 3 and 1087 degrees of freedom, consistent with the magnitude of contractual retained interests by type of securitized loan being risk-relevant. The F-statistic for the total expansion of the model over the model reported in the first column of Table 4 is also significant at 9.9 with 5 and 1087 degrees of freedom. Consistent with H2, the coefficient on *COMMRI* is significantly positive ($t = 3.1$). However, inconsistent with this hypothesis, the coefficient on *MRI* is insignificantly positive; we explain this result below. Not directly predicted in H2 but consistent with the development of that hypothesis, the coefficient on *CONSRI* is insignificant. This result is consistent with implicit recourse being the primary means by which banks remain exposed to the risk of these revolving consumer loans.

We test H3 using the model reported in the rightmost column of the Table 4, which expands the model reported in the third column by breaking *MRI*, *CONSRI*, and *COMMRI* into their credit-enhancing interest-only strip and subordinated ABS components (e.g., *MRI* into *MIO* and

MSABS). This expansion of the model raises the adjusted R^2 by another 2.4 percent to 22.6 percent and yields a significant incremental F-statistic of 12.0 with 3 and 1084 degrees of freedom, consistent with different types of contractual retained interests having different risk-relevance. The F-statistic for the total expansion of the model over the model reported in the first column of Table 4 is also significant at 10.9 with 8 and 1084 degrees of freedom.

Consistent with H3, the coefficient on *MIO* is significantly positive ($t = 5.5$), and it is significantly larger than the insignificant coefficient on *MSABS* ($t = 4.2$). These results imply that banks are exposed to the total risk of their securitized mortgages in a more concentrated form through retained credit-enhancing interest-only strips than through retained subordinated *ABS*. A possible reason why the coefficient on *MSABS* is insignificant is that real estate boomed during almost all of our sample period, which may have reduced the perceived risk of these relatively less risk-concentrated retained interests, although these investments likely have performed poorly since the end of our sample period. In any event, the insignificant coefficient on *MSABS* and the larger mean of *MSABS* than of *MIO* reported in Table 1, Panel C help explain the unexpected insignificant coefficient on *MRI* in the model reported in the third column of Table 4.

Not directly predicted in H3 but consistent with the development of that hypothesis, the coefficients on both types of retained interests for consumer loans are insignificant. This result again suggests implicit recourse is the primary means by which banks remain exposed to the risk of these revolving consumer loans.

Also consistent with H3, the coefficient on *COMMIO* ($t = 2.4$) is significantly positive, the coefficient on *COMMSABS* ($t = 1.5$) is significantly positive at the 10 percent level, and the difference of the coefficients on *COMMIO* and *COMMSABS* is significantly positive ($t = 2.4$). Similar to the previously discussed results for mortgage securitizations, these results imply that issuers are exposed to the total risk of securitized commercial loans in a more concentrated form through the retention of credit-enhancing interest-only strips than subordinated *ABS*. Unlike in mortgage securitizations, however, there is weak evidence that banks retaining subordinated *ABS* in commercial loan securitizations remain exposed to the risk of the securitized loans.

Summarizing, we find support for each of our three hypotheses. In our tests of H1, we find that the differences in the estimated associations between banks' total equity risk and the three types of off-balance sheet securitized loans have the predicted signs, but only the differential association for consumer loans versus mortgages is significant. In our tests of H2, we find strong results consistent with the hypothesis regarding the risk-relevance of contractual retained interests in commercial loan securitizations, but unexpectedly insignificant results for the risk-relevance of contractual retained interests in mortgage securitizations. In our tests of H3, as predicted we find banks' total equity risk is significantly more positively associated with retained credit-enhancing interest-only strips than with retained subordinated *ABS* for both mortgage and commercial loan securitizations. Thus, the retention of credit-enhancing interest-only strips is a primary means by which banks remain exposed to the risk of those loans. Not directly predicted in H2 and H3 but consistent with the development of those hypotheses, we find that contractual retained interests are not risk-relevant in consumer loan securitizations, consistent with implicit recourse being the primary means by which banks remain exposed to the risks of consumer loans.

The total explanatory power of Equation (1) rises substantially with the addition of the securitization characteristics, which increases the model R^2 by 5.7 percent from 16.9 percent to 22.6 percent. This increase obtains even though the base model includes *ABS*, essentially all of the variables prior research has found to be associated with cross-sectional differences in banks' equity risk, and a host of other potentially risk-relevant control variables. Strikingly, we find that banks' total equity risk is more strongly and differentially associated with the various types of off-balance sheet securitized loans and on-balance sheet retained interests from securitizations than with their various types of on-balance sheet loans. This result suggests that banks' securitized loans and retained interests are more varied in their risk implications than are their various types of on-balance sheet loans, perhaps because the latter must meet common risk management guidelines.

Pulling in Large Values of the Securitization Characteristics and Influential Observations

As discussed in Section V, all of the securitization characteristics are bounded below at zero and right-skewed. These distributions reflect unavoidable and economically important aspects of securitizations, because banks that originate credit riskier loans have more incentive to securitize those loans and must retain larger contractual and/or non-contractual first-loss interests when they do. Moreover, our hypotheses are inherently more important for observations with larger values of the securitization characteristics. Despite these facts, the concern still arises that the results discussed above may be driven by observations that have large values of the securitization characteristics or that are influential in the estimation.

We provide evidence as to which of our results are susceptible to large values of the securitization characteristics by estimating the unconstrained version of Equation (1) using the same approach as in the estimation reported in the rightmost column of Table 4 but winsorizing the upper tails of the securitization characteristics at the 2.5 percent and 5 percent levels, rather than at the 1 percent level used for the other model variables. To reduce the potential effect of influential observations, we estimate Equation (1) using least absolute deviation (LAD) estimation, which reduces the weight placed on large model residuals compared to least-squares estimation.

The results of these approaches are reported in Table 5. We focus on the results that differ from our primary results discussed earlier. Our prior inferences regarding the level of the coefficients on *MIO* and *COMMIO* and their differences from the coefficients on *MSABS* and *COMMSABS*, respectively, remain using each of the approaches. Hence, the previously discussed support for H2 and H3 in the primary analyses persists under all the approaches.

Our inferences regarding the other mortgage securitization characteristics are also quite robust, although the coefficient on *MBS* is significant at only the 10 percent level in the LAD estimation. This robustness likely reflects the fact mortgage securitizations are the most common and least concentrated type of loan securitization across banks.

In contrast, the coefficient on *CONSBS* is insignificantly positive and insignificantly greater than the coefficient on *MBS* when either the stronger 5 percent winsorization rule or LAD estimation are used, suggesting that the previously discussed support for H1 is somewhat fragile. The coefficient on *CONSBS* in the untabulated LAD estimation of the model in the second column of Table 4 is significantly positive and significantly greater than the coefficient on *MBS*, however; since it is this model that we use to test H1, only the use of the 5 percent winsorization rule yields inferences different from those discussed previously. The sensitivity of the coefficient on *CONSBS* to the use of this rule reflects the fact that consumer loans securitizations are the most concentrated type of loan securitization across banks. It implies that the positive coefficient on *CONSBS* is substantially driven by observations that take relatively large values of that variable, thereby weakening the previously discussed support for H1.

The only inference for the other commercial loan securitization characteristics that changes with the choice of approach is that the coefficient on *COMMSABS* is significantly positive at conventional levels (not the previous 10 percent level) in the LAD estimation. This strengthens the previously discussed weak evidence that the retention of subordinated *ABS* is a meaningful mechanism for banks to retain the risk of securitized commercial loans.

In untabulated analysis, we also estimated Equation (1) transforming the securitization characteristics using the natural logarithm of one plus the characteristics (a weaker concave transformation) and the square root of the characteristics (a stronger concave transformation). Our results are similarly robust to these transformations.

TABLE 5

OLS Estimation with Time and Firm Clustered Standard Errors of Equation (1) Pulling in Large Values of the Securitization Characteristics

$$\sigma_R = \alpha + \gamma_M MBS + \lambda_M MIO + \mu_M MSABS + \gamma_{CONS} CONSBS + \lambda_{CONS} CONSIO + \mu_{CONS} CONSSABS + \gamma_{COMM} COMMBS + \lambda_{COMM} COMMIO + \mu_{COMM} COMMSABS + f(\text{control variables}) \quad (1)$$

Variable (Predicted Sign)	Winsorization of Securitization Characteristics		Least Absolute Deviation (LAD) Estimation
	2.5%	5%	
Intercept (?)	**2.17**	**1.89**	**2.84**
	(2.8)	**(2.3)**	**(3.0)**
MBS (+)	**0.09**	**0.11**	0.05
	(2.5)	**(3.5)**	(1.3)
MIO (+)	**8.33**	**34.35**	**3.45**
	(5.4)	**(1.9)**	**(5.0)**
MSABS (+)	−0.40	−1.51	−0.62
	(−0.5)	(−0.9)	(−0.9)
CONSBS (+)	**0.64**	−0.05	0.43
	(2.9)	(−0.1)	(1.2)
CONSIO (+)	1.95	10.93	2.74
	(0.2)	(1.0)	(0.3)
CONSSABS (+)	−10.76	−4.13	−1.21
	(−1.5)	(−0.5)	(−0.2)
COMMBS (+)	−0.07	−0.34	−0.32
	(−0.3)	(−1.3)	(−1.2)
COMMIO (+)	**47.54**	**95.40**	**33.32**
	(2.0)	**(3.0)**	**(5.4)**
COMMSABS (+)	3.46	2.06	**6.39**
	(0.5)	(0.3)	**(2.0)**
MASSETG (+)	0.18	0.57	−0.06
	(0.4)	(1.0)	(−0.2)
MLOANS (?)	0.04	−0.01	0.13
	(0.5)	(−0.1)	(1.4)
CONSLOANS (?)	−0.07	−0.06	−0.10
	(−0.9)	(−0.8)	(−0.7)
COMMLOANS (?)	0.02	0.00	0.00
	(0.4)	(0.0)	(0.0)
CAP (?)	0.01	0.02	−0.01
	(0.3)	(1.0)	(−0.3)
SIZE (−)	**−0.19**	**−0.20**	**−0.24**
	(−2.7)	**(−3.0)**	**(−3.0)**

(continued on next page)

TABLE 5 (continued)

Variable (Predicted Sign)	Winsorization of Securitization Characteristics		Least Absolute Deviation (LAD) Estimation
	2.5%	5%	
σ_X (+)	**0.67**	**0.66**	0.41
	(2.0)	**(1.8)**	(1.3)
GAP (+)	−0.05	−0.04	−0.02
	(−1.6)	(−0.9)	(−0.5)
NCO (+)	**9.85**	**21.42**	**4.36**
	(2.6)	**(3.4)**	**(2.5)**
MNPLS (+)	−0.30	−0.86	0.32
	(−0.4)	(−1.0)	(0.6)
CONSNPLS (+)	−0.01	−0.08	−0.30
	(0.0)	(−0.1)	(−0.3)
COMMNPLS (+)	−2.73	−3.56	−4.80
	(−0.6)	(−0.7)	(−1.3)
DERIV (?)	0.00	0.00	0.00
	(0.7)	(0.4)	(−0.3)
TRADINC (?)	5.64	9.52	14.39
	(0.4)	(0.6)	(1.7)
SECINC (+)	1.60	4.10	0.00
	(0.7)	(1.5)	(0.1)
SECUR (?)	**1.05**	**0.72**	**1.20**
	(2.9)	**(2.3)**	**(2.5)**
Adjusted R^2	0.217	0.204	0.170
# Observations	1110	1110	1110

t-statistics calculated using firm and time clustered standard errors (see Petersen 2007) are in parentheses underneath coefficients. t-statistics significant at the 5 percent level in a one-tailed test if the coefficient has the predicted sign and a two-tailed test otherwise are in boldface.

The first two columns of the table report the OLS estimation and t-statistics calculated using firm and time clustered standard errors of the unconstrained version of Equation (1), using the same methods as for the estimation reported in the fourth column of Table 4 and described in the notes to that table, but pulling in large values of the securitization characteristics by winsorizing the upper tails of the securitization characteristics at 2.5 percent and 5 percent, respectively.

The third column of the table reports the estimation of the unconstrained version of Equation (1) minimizing the sum of absolute deviations of the residuals (LAD estimation) again with firm and time clustered standard errors. The adjusted R^2 for this estimation is the percentage of the sum of absolute deviations in the dependent variable around its mean that is explained by the explanatory variables.

The sample and winsorization rules (except for the securitization characteristics in the models reported in the third and fourth columns of the table) are described in the notes to Table 1. The variables are defined in the Appendix.

Other Specification Analyses

We conducted three additional types of specification analyses to ensure that our results are robust to the form and estimation of the empirical model. First, we decomposed total consumer loans into revolving and closed-end consumer loans. The results for total consumer loans correspond closely to the results for revolving consumer loans, presumably because 90 percent of banks' securitized consumer loans are revolving. Second, as discussed earlier, we included a number of additional control variables, with minimal effect on the results.

Third, we estimated Equation (1) using a variety of alternative regression methods: (1) GLS including fixed time effects and taking into account the estimated first-order autocorrelation of the residuals, (2) cross-sectional OLS with significance levels determined using the time-series standard deviation of the coefficients across quarters, and (3) OLS using the averages of the variables for each bank over the sample period. Our results are substantially the same regardless of the estimation approach used, although OLS on quarterly cross-sections yields lower t-statistics than those reported in the paper, presumably due to the relatively low number of banks in each cross-section, the relatively high number of explanatory variables in Equation (1), and the inefficiency of this estimation approach (Petersen 2007).

VII. CONCLUSION

In this paper, we investigate how observable characteristics of banks' loan securitizations accounted for as sales determine banks' retention of the risks of the securitized loans. We predict and find that banks retain more of these risks through either contractual or non-contractual interests when: (1) the types of loans have higher and/or less externally verifiable credit risk (specifically, commercial loans more than consumer loans more than mortgages), so banks must retain larger contractual or non-contractual first-loss interests in the loans; (2) the loans are closed-ended and banks retain larger contractual interests in the loans; and (3) the loans are closed-ended and banks retain types of contractual interests that more strongly concentrate the risk of the securitized loans (specifically, credit-enhancing interest-only strips more than other subordinated asset-backed securities). We also show that the magnitude and type of retained contractual interests are not risk-relevant in revolving loan securitizations, because banks have more incentive and ability to provide implicit recourse, a non-contractual interest. We infer greater risk retention when these characteristics are more positively associated with banks' total equity risk, as measured by stock return volatility. We control for a host of variables, including essentially all of the variables that prior research has shown to be associated with banks' equity risk, banks' on-balance sheet loan portfolio composition, the credit risk of the securitized loans, banks' risk management, technical sophistication, dependence on securitization income, and liquidity.

Our results have direct implications for accounting standard-setters about potential risk-relevant disclosures of securitizations. For securitizations accounted for as sales, SFAS No. 140 currently requires considerably more aggregate disclosures than our results indicate are useful. Most notably, the standard does not require any disclosures distinguishing retained securities by type of security, while our results indicate these disclosures of credit-enhancing interest-only strips separately from subordinated ABS is critical. Our results also suggest that disclosures indicating whether issuers are likely to provide implicit recourse or not (e.g., early amortization provisions and the use of master trusts) would be useful.

While our securitization characteristics necessarily capture only securitizations accounted for as sales, there is no obvious reason why similar disclosures would not also be useful for securitizations accounted for as secured borrowings. SFAS No. 140 applies control-based criteria to determine whether securitizations should be accounted for as sales versus secured borrowings. It is entirely possible for issuers to retain control over the securitized assets, and thus be required by SFAS No. 140 to use secured borrowing accounting, but to transfer some or even all of the risk and rewards of those assets to ABS purchasers or other parties. SFAS No. 140 does not require any disclosures about securitizations accounted for as secured borrowings, an unfortunate but easily remedied aspect of the standard. In this regard, some issuers intentionally "flunk" sales accounting, with the consequence and perhaps intent of avoiding SFAS No. 140's disclosure requirements.

Our results also have direct implications for users of financial and regulatory reports interested in assessing the total equity risk of banks and other firms conducting securitizations. They indicate that these users must understand the characteristics of securitizations that are associated with issuers' retention of the risk of the securitized loans. In the context of banks' loan securitizations, our results illustrate how those characteristics, the most important of which is the amount of credit-enhancing interest-only strips, map into banks' total equity risk.

APPENDIX
Variable Definitions

Variable	Definition
σ_R	standard deviation of daily returns for the following quarter
MBS	securitized 1–4 family residential mortgages divided by market value of equity
CONSBS	securitized consumer loans (home equity lines of credit, credit card receivables, automobile loans, and other consumer loans) divided by market value of equity
COMMBS	securitized commercial loans (commercial and industrial loans and all other loans, leases, and assets) divided by market value of equity
ABS	total securitized loans divided by market value of equity
MRI	total retained interests from mortgage securitizations divided by market value of equity
MIO	retained credit-enhancing interest-only strips from mortgage securitizations divided by market value of equity
MSABS	retained subordinated asset-backed securities from mortgage securitizations divided by market value of equity
CONSRI	total retained interests from consumer loan securitizations divided by market value of equity
CONSIO	retained credit-enhancing interest-only strips from consumer loan securitizations divided by market value of equity
CONSSABS	retained subordinated asset-backed securities from consumer loan securitizations divided by market value of equity
COMMRI	total retained interests from commercial loan securitizations divided by market value of equity
COMMIO	retained credit-enhancing interest-only strips from commercial loan securitizations divided by market value of equity
COMMSABS	retained subordinated asset-backed securities from commercial loan securitizations divided by market value of equity
ARI	total retained interests from all loan securitizations divided by market value of equity
AIO	retained credit-enhancing interest-only strips from all loan securitizations divided by market value of equity
ASABS	retained subordinated asset-backed securities from all loan securitizations divided by market value of equity
MASSETG	percentage growth in managed asset (assets plus ABS) for the quarter
MLOANS	mortgage loans outstanding divided by market value of equity
CONSLOANS	consumer loans outstanding divided by market value of equity

Variable	Definition
COMMLOANS	commercial loans outstanding divided by market value of equity
CAP	Tier 1 risk-based capital ratio
SIZE	logarithm of total assets ($ thousands)
σ_X	standard deviation of earnings per share for past six quarters
GAP	absolute value of difference between book values of assets and liabilities expected to reprice in the following year divided by market value of equity
NCO	net loan charge-offs of securitized loans during quarter divided by *ABS*
MNPL	past due securitized mortgages divided by *MBS*
CONSNPL	past due securitized consumer loans divided by *CONSBS*
COMMNPL	past due securitized commercial loans divided by *COMMBS*
DERIV	notional amounts of interest-rate derivatives divided by market value of equity
TRADINC	trading income during quarter divided by market value of equity
SECINC	servicing fee and securitization income during quarter divided by market value of equity
SECUR	total (trading, available-for-sale, and held-to-maturity) securities minus *ARI* divided by total assets

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Earnings Restatements, Changes in CEO Compensation, and Firm Performance

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ABSTRACT: Prior research finds that earnings restatements are linked to CEOs' excessive option-based compensation and equity holdings. In this paper, we investigate whether firms that experience earnings restatements recontract with their CEOs to reduce their option-based compensation and if so, whether this leads to improved firm performance. Based on 289 restatement firms over the period 1997–2001, we find that the proportion of CEOs' compensation in the form of options declines significantly in the two years following the restatement. Furthermore, we document that this reduction is accompanied by a decrease in the riskiness of investments, as reflected in lower stock return volatility and subsequent improvements in operating performance. Our results suggest that a decrease in option-based compensation reduces CEOs' incentives to take excessively risky investments, resulting in improved profitability. Overall, our findings provide insights into the design and efficacy of CEO compensation contracts.

Keywords: *earnings restatements; stock options; CEO compensation; operating performance.*

Data Availability: *Data used in this study are available from public sources identified in the paper.*

JEL Classifications: *G30; G32; J33; M4.*

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I. INTRODUCTION

The purpose of this paper is to provide insights into the design and efficacy of chief executive officer (CEO) compensation contracts following an earnings restatement. In the late 1990s, corporate America was seemingly awash in financial reporting failures. The U.S. General Accounting Office (GAO 2003) documented an astounding total of 919 restatements from January 1997 to June 2002. A chorus of critics argues that stock-based compensation is responsible for these financial reporting failures (Levitt 1998; Knowledge at Wharton 2003). For example, Jensen (2005) suggests that overvalued equity can lead to agency problems, whereby managers use aggressive accounting to maintain the overvaluation when they cannot continue producing stellar results, thus reducing the core value of the firm. Jensen (2005) suggests that stock-based compensation, especially option-based compensation, is at the root of the damaging effects of aggressive accounting because it encourages managers to increase short-term stock prices (*The Economist* 2002; Jensen 2005).

Consistent with these claims, an emerging body of academic work has established a link between stock-based compensation and earnings restatements. For example, Efendi et al. (2007) find a positive relation between the likelihood of an earnings restatement and the level of executive stock options that are deep in-the-money. Burns and Kedia (2006) find that incentives to misreport earnings increase with the sensitivity of CEO's option holdings to both stock price and volatility.

The cost of aggressive accounting to firms is substantial. Palmrose et al. (2004) document a decline of 10 percent in a restatement firm's market value at the announcement of the restatement. Karpoff et al. (2008) document substantial penalties on firms involved in financial misreporting. These penalties include billions of dollars in monetary fines and reputation loss.

Given these costs and the importance of the relation between compensation contracts and accounting failures, rational firms should recontract with their CEOs to reduce such costs. However, there is little research on the changes in compensation contracts following a restatement. In this study, we seek to fill this gap by investigating the association between the revelation of an earnings restatement and subsequent changes in CEO option-based compensation, and economic consequences of these changes.

Because the findings in prior research imply that restatement firms' CEO equity incentives are "too high" relative to those of control firms, we expect restatement firms to reduce these incentives following a restatement, provided that doing so results in a net benefit. Given that firms have a limited ability to reduce CEOs' existing equity holdings, we focus our analyses on changes in new grants of stock options. We expect that option grants in the post-restatement period will be lower than those in the pre-restatement period. Our results are consistent with this expectation. Using a sample of 289 restatements and the year prior to restatement announcement as the benchmark year, we find that while total CEO compensation does not significantly change by the second year after the restatement announcement, there is a significant shift from option-based compensation to salary over this period. In univariate tests, we find that the proportion of the value of option grants to total compensation declined by 5.6 percentage points for the restatement firms, while control firms experienced an *increase* of 2.6 percentage points in this proportion over the same period. The analyses indicate that the *number* of option grants also declines for restatement firms compared to control firms. The reduction in the use of option grants for restatement firms holds after we control for the level of stock and option holdings as well as other determinants of option-based compensation such as firm size, growth opportunities, leverage, idiosyncratic risk, R&D intensity, stock returns, cash compensation, and industry and year fixed effects. Because about half of the restatement firms experienced CEO turnover after restatements, we also investigate the change in option grants separately for extant and new CEOs. We find that our results hold for both extant and new CEOs.

Because prior research that finds a relation between equity incentives and restatements uses the year prior to the earliest year restated as the benchmark year, we assess the sensitivity of our results using this benchmark instead of the year prior to the restatement announcement. Our inferences remain unaffected by this test, although the magnitude of the change in option grants is slightly smaller. We also test whether restatement firms changed option-based compensation from this alternative benchmark to the year prior to the restatement announcement and find that these firms actually *increased* option-based compensation over this period. This result indicates that restatement firms only made remedies after the problem with aggressive financial reporting was publicly known.

Our results are also robust to a battery of other sensitivity tests, including expanding the sample to include other top executives, using industry-year matched control firms, controlling for changes in the joint CEO/COB position and restatement specific characteristics, and using alternative sample years. We also find that there is a reduction in the sensitivity of the value of option grants to both stock price and return volatility, consistent with reduced incentives to engage in opportunistic activities and excessive risk taking.

If the reduction in option-based compensation is a result of *unwarranted* negative public perception of option usage, we would expect a decrease in firm performance as firms deviate from optimal contracting. However, if restatements result from too high a level of incentive compensation and the reduction in option compensation after the restatement better aligns managerial incentives with those of shareholders, we would expect to observe improved firm performance. To test this expectation, we examine subsequent performance and find that compared to control firms, restatement firms that reduced their CEO's option compensation on average experienced an increase in return on assets (ROA) of 2.1 percent (5.6 percent) in the first year (the first two years) after this reduction. For firms that did not reduce CEO option-based compensation, however, we do not find evidence of improved operating performance. Additional analyses indicate that self-selection bias (regardless of whether restatement firms reduce option grants), CEO turnover, "big bath" accounting charges, abnormal accruals, and mean reversion of ROA do not drive the ROA results.

One way that operating performance can improve is through a reduction in excessively risky investments. While options can be used to induce managers to take risky positive net present value projects, too high a level of options can induce *excessive* risk taking in investment decisions. When these investments do not produce net positive returns, managers may engage in earnings management to mask underperformance. This can ultimately result in a restatement. After the reduction in option-based compensation, the convexity of CEOs' compensation contracts decreases. Consequently, the incentive to take excessively risky projects is reduced and operating performance likely improves as a result. Consistent with this argument, we report that relative to control firms, restatement firms that reduce option compensation experience a significant decrease in stock return volatility, a common proxy for the riskiness of investments, while those restatement firms that do not reduce option compensation do not have such a reduction.

Overall, our results imply that economic benefits accrue to restatement firms that reduce their CEOs' option-based compensation, indicating that the reduction in option grants helps adjust managers' equity incentives toward optimal levels. A natural question that follows is if reducing option usage is associated with improved firm performance, why is it that all restatement firms do not do so? To help answer this question, we conduct a within-sample analysis. We find that the likelihood of a reduction in options usage is positively related to the level of option grants prior to the restatement and in some specifications, this likelihood is higher for income-decreasing restatements.

This paper contributes to the literature in two important ways. First, it extends the growing literature that examines changes in monitoring mechanisms following accounting failures by documenting a significant reduction in option-based compensation after a restatement. Our paper thus complements extant studies that investigate changes in management and board membership following accounting failures (e.g., Beneish 1999; Desai et al. 2006; Farber 2005; Srinivasan 2005). Taken together, these studies indicate that firms with financial reporting failures improve their monitoring mechanisms to address their agency problem. Our evidence may also be useful to restatement firms that are considering or are using compensation policy as part of a strategy to recover from the fallout of a restatement.

Second, our paper extends the literature on the relation between managerial ownership (including stock options) and firm performance. To date, the evidence of such a relation is mixed (e.g., Demsetz and Lehn 1985; Morck et al. 1988). It is difficult to identify a relation between stock-based compensation and firm performance in a general setting because in equilibrium firms choose the optimal level of CEO stock-based compensation (Hanlon et al. 2003). Core et al. (2003, 35) argue that "an effective sample for testing the link between ownership and firm value is a set of firms for which managerial equity ownership levels are too low (high), but then recontract to increase (decrease) ownership." In this study, we have the advantage of being able to exploit an event (i.e., restatement) that highlights the off-equilibrium level of CEO equity incentives to examine the relation between equity ownership and firm performance.[1]

The remainder of this paper is organized as follows. In Section II, we provide an overview of the related literature and develop our hypothesis for the change in option-based compensation. In Section III, we present our sample and data. Section IV reports the empirical results for the change in option-based compensation following restatements. Section V documents the efficacy of changes in option-based compensation after restatements. We summarize and conclude in Section VI.

II. PRIOR RESEARCH AND HYPOTHESIS FOR THE CHANGE IN OPTION-BASED COMPENSATION

Our paper is related to studies that investigate the association of equity incentives and aggressive financial reporting, and to studies that document the costs of financial reporting failures. Below, we briefly review these studies and develop our hypothesis for the change in option-based compensation.

Managerial ownership and stock-based compensation, such as option grants and stock grants, are important mechanisms designed to align managers' incentives with those of shareholders (Jensen and Meckling 1976; Smith and Stulz 1985; Morck et al. 1988). Accordingly, the wealth of managers who receive stock-based compensation is sensitive to their firms' stock prices. While this sensitivity can motivate managers to make value-increasing operating, financing, and investment decisions, it can also induce managers, even those who are well-intentioned, to fixate on short-term stock prices. As argued and documented in Yermack (1995) and Cheng and Warfield (2005), there is a positive relation between CEOs' equity incentives and their insider selling activity. Accordingly, the wealth of these managers is sensitive to short-term stock prices. To increase the short-term stock price and their personal wealth, CEOs might engage in earnings management, which can lead to earnings restatements.

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[1] Core and Larcker (2002) use an off-equilibrium setting in which firms adopt ownership target plans. They find that after the adoption of such plans, firms in which CEOs increase their equity ownership experience improved performance.

Equity incentives, especially option holdings, are also important for inducing risk-averse managers to choose risky positive net present value projects. Agrawal and Mandelker (1987) document a positive relation between ownership in the form of stock and option holdings and a firm's stock return variance, which reflects the underlying riskiness of investments.[2] Guay (1999) finds that stock return variance is positively related to the convexity of compensation contracts. Defusco et al. (1990) find an increase in stock return variance after the approval of stock option plans. All of these studies suggest that stock options motivate managers to increase stock return volatility by undertaking risky projects. However, when option holdings are too high, managers might engage in *excessive* risk taking, such as over-investing in risky capital projects, research and development (R&D), or marketing activities. When these risky investments do not produce net positive returns, managers may attempt to mask the resulting underperformance with earnings management, which can ultimately result in a restatement (Burns and Kedia 2006).[3]

There is an emerging line of academic literature that examines the link between stock-based compensation and aggressive financial reporting. Using various proxies for earnings management, such as meeting or just beating analysts' forecasts and abnormal accruals, Cheng and Warfield (2005) and Bergstresser and Philippon (2006) find that CEOs with high equity incentives are more likely to engage in earnings management. More closely related to our study, a set of papers has found that incentive misalignment in the form of excessive option compensation led to restatements. Using 95 firms announcing earnings restatements over the period 2001–2002, Efendi et al. (2007) find a positive relation between the value of CEOs' options that are deep in-the-money and the probability of an earnings restatement. Burns and Kedia (2006) use 215 restatements announced over the period 1995–2002 and find that the sensitivity of CEOs' option portfolio to both stock price and return volatility is positively associated with the probability of misreporting earnings. Finally, Harris and Bromiley (2007) analyze 434 restatements announced over the period 1997–2002 and find that compared to counterparts in other firms, CEOs in restatement firms receive a higher proportion of their compensation in the form of stock options.

Earnings management and particularly earnings restatements are costly to a firm and its managers. It is well documented that restatements are associated with a decrease of about 10 percent in firm market value (GAO 2003; Palmrose et al. 2004). Prior research (e.g., DuCharme et al. 2004; Lu 2003) also finds that the likelihood of litigation increases with the extent of earnings management. In particular, Peng and Roell (2004) find that executive incentive pay increases the probability of securities class-action litigation and that this correlation is at least partly driven by earnings management induced by executive incentive pay. Karpoff et al. (2008) provide detailed documentation of the outcome of such litigation. In particular, they find that companies involved in financial misrepresentations in the 1978–2002 period incurred about $13.6 billion in fines and class-action lawsuit damages and a reputational penalty of about $100 billion.

In sum, the extant literature has documented a positive relation between CEOs' equity incentives and costly financial reporting failures. Our paper extends this literature by examining whether firms mitigate their agency problems related to earnings restatements by adjusting CEOs' equity incentives. To induce managers to make more efficient strategic and operational decisions, such as reducing excessive risk taking, and to reduce the potential for future earnings management, restatement firms can reduce their CEOs' equity incentives. However, restatement firms have limited remedies available to make such a change because these firms cannot force their CEOs to liquidate their existing equity holdings. As argued and found in Core and Guay (1999), firms use the flow of equity incentives (i.e., stock and option grants) to adjust managers' total equity incentives to an optimal level. Thus, restatement firms can adjust CEOs' option-based compensation downward to a more optimal level. While firms can also adjust their CEOs' restricted stock grants, doing so is unlikely to be effective because restricted stock grants have not been identified in the literature as an important determinant of earnings restatements and because restricted stock grants are less frequently used and have a smaller magnitude than option grants (Cheng and Warfield 2005; Burns and Kedia 2006; Efendi et al. 2007).

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[2] Using the context of Oil and Gas companies, Rajgopal and Shevlin (2002) find a positive relation between risk taking and stock return volatility.

[3] Cassidy (2002) and Madrick (2003) provide anecdotal evidence that fixation on short-term stock price and excessive risk taking are associated with the recent spate of accounting scandals and that option compensation underlies the problem.

The preceding discussion leads to the following hypothesis, stated in the alternative form:

> **H1:** Compared to control firms, restatement firms will experience a decrease in their CEOs' option-based compensation from the pre-restatement period to the post-restatement period.

A natural question that arises is why firms' compensation contracts with managers are suboptimal prior to a restatement and why they become more optimal afterward. To help explain this, we appeal to arguments in Core and Guay (1999) and Core et al. (2003). The essence of these arguments is that compensation contracts may not always be optimal for two reasons. First, it is likely that firms do not know that the compensation contracts are suboptimal. In our case, it is possible that the effect of option-based compensation on earnings management and the corresponding costs of earnings restatements are unknown to the firm prior to the restatement announcements. The restatement announcement then highlights to firms that their CEOs' incentive compensation is suboptimal and therefore should be adjusted toward a more optimal level. Second, while firms may initially contract optimally with their CEOs, over time CEOs' equity incentives can become misaligned with optimal levels for a variety of reasons. For example, firm and/or manager characteristics can change—the firm grows or its investment opportunities shift and managers may exercise stock options for personal consumption. The incentives provided by option grants can also change over time because of changes in firm volatility, for example. Because it is costly to recontract continuously, firms will only do it when a net benefit exists. One significant benefit of recontracting is the reduction in incentives to chase excessively risky projects. A potential cost of cutting option grants is that managers may not work as hard as before or may not make risky investments as preferred by shareholders. If this cost is too high, then restatement firms will not reduce CEOs' option grants and we will not find results consistent with H1. Whether reducing option grants provides a net benefit *ex post* is an empirical question that we examine later in this paper.

Also, we may not find results consistent with H1 if our assumption that CEOs' equity incentives are "too high" for restatement firms does not hold. A positive relation between equity incentives and the likelihood of reporting failures is not universal. In contrast to the above-mentioned studies, Erickson et al. (2006) fail to find such a relation using a sample of 50 firms cited by the Securities and Exchange Commission (SEC) for fraud. Although Erickson et al. (2006) do not reconcile their findings with studies that find such an association, the differences in the nature of the events examined (i.e., restatement versus fraud) and sample size may explain the different results.[4,5]

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[4] We note that the SEC cited only 15 of our sample firms for fraud.

[5] In untabulated analyses, we directly examine whether our restatement firms have higher equity incentives than do control firms in the year immediately preceding restatement. We find significantly higher equity incentives for restatement firms, thus providing support for the critical assumption underlying H1.

Note that our study is related to, but different from, studies that examine the link between accounting rules for option grants and the level of stock option compensation (Brown and Lee 2007; Carter et al. 2007; Darrough and Li 2006). These papers document a reduction in option usage in response to the passage of SFAS No. 123(R), and they attribute the build-up in options usage to accounting rules in place prior to SFAS No. 123(R). Because these prior rules did not require firms to expense option-based compensation if the exercise price is the same as the stock price at the option grant date, they essentially provided firms with a subsidy that encouraged the use of options. This might help explain why restatement firms have excessive levels of option-based compensation. However, our sample precedes the passage of SFAS No. 123(R), and thus the phenomenon documented in these studies should not confound our results.

III. SAMPLE AND DATA

Sample of Restatement Firms

We obtain restatement data from GAO (2003), which contains earnings restatements announced in the period January 1997 to June 2002. According to the GAO, these restatements include only those due to an accounting irregularity, which GAO (2003, 2) defines as "an instance in which a company restates its financial statements because they were not fairly presented in accordance with generally accepted accounting principles (GAAP). This would include material errors and fraud."

Table 1, Panel A presents the restatement sample reconciliation. The GAO report identifies 919 restatements. Because we require a two-year post-restatement period and because ExecuComp only provided compensation data through 2003 at the time of data collection, we exclude 135 observations with fiscal years later than 2001. We lose another 204 and 55 observations because of missing data from Compustat and CRSP, respectively. We lose 228 observations because of missing compensation data for the pre- or post-restatement period. Finally, we lose eight observations because of multiple restatements in the same year, bringing our final sample to 289 restatements. The sample size for specific analyses varies with the availability of additional data.

Panel B of Table 1 presents the yearly distribution of the sample restatements. Our sample period spans the years 1997 to 2001, with most of the restatements (79 percent) announced in the years 1999 to 2001. We provide the distribution of restatement characteristics in Panel C of Table 1. As indicated in that panel, company-initiated restatements account for the largest share of total restatements (40 percent). More than half of the restatement firms are Nasdaq-listed. The largest percentage of restatements involves revenue accounts (43.9 percent). Panel D of Table 1 shows that our sample firms are from a broad spectrum of industries. Panel E of Table 1 presents descriptive statistics of restatement firms' financial characteristics in the year of restatement. Our restatement firms have a market value of $3.9 billion on average and are profitable, with a mean net operating income of $166 million. The mean book-to-market and leverage ratios are 0.672 and 0.187, respectively.

These descriptive statistics are similar to those presented in the GAO (2003) report and in prior studies, indicating that our sample is similar to that used in prior research. Also consistent with prior studies, the average abnormal return for the three days centered on the restatement announcement date is −6.7 percent for our sample (untabulated).

Compensation Data

Generally, a CEO's compensation is comprised of salary, bonus, stock options, restricted stock, and other long-term incentives. Recall that because firms have a limited ability to reduce their CEOs' equity incentives, we hypothesize that restatement firms will reduce option-based compensation for CEOs after the restatements. We measure option-based compensation in two

TABLE 1

Sample Reconciliation and Descriptive Statistics of Restatement Firms

Panel A: Sample Reconciliation

Restriction		Sample Size
Number of restatements per GAO in the period 1997-2002		919
Less:		
Firms with fiscal year of restatement announcement later than 2001[a]	135	
Firms without basic financial data from Compustat (i.e., sales, total assets, book value, net income)	204	
Firms without returns data from CRSP in the three trading days around the restatement announcement	55	
Firms with missing compensation data for the pre- or post-restatement period	228	
Firms with multiple restatements in the same year[b]	8	630
Final restatement sample		289

Panel B: Yearly Distribution of Restatements

	Restatement Announcement Year					
	1997	1998	1999	2000	2001	Total
n	37	24	77	70	81	289
% of total	12.8%	8.3%	26.6%	24.2%	28.1%	100%

Panel C: Restatement Characteristics

	Frequency	Percentage of Total
Full sample	289	100.0%
Initiated by		
SEC	54	18.7%
Auditor	23	8.0%
Co.	116	40.1%
Unknown	96	33.2%
Exchange Listing		
NYSE	117	40.5%
AMEX	12	4.1%
Nasdaq	160	55.4%
Reason[c]		
Revenue recognition	127	43.9%
Restructuring	35	12.1%
Cost or expense	32	11.1%

(continued on next page)

TABLE 1 (continued)

	Frequency	Percentage of Total
Merger and acquisition	22	7.6%
In-process R&D	18	6.2%
Securities related	15	5.2%
Other	40	13.9%

Panel D: Industry Classification of Restatement Firms

Industry	Two-Digit SIC Code	n	%
Oil and Gas	13	5	1.73
Food Products	20	6	2.08
Paper and Paper Products	24–27	6	2.08
Chemical Products	28	17	5.88
Manufacturing	30–34	10	3.46
Computer Equipment and Services	35, 73	75	25.95
Electronic Equipment	36	24	8.30
Transportation	37, 39, 40, 42, 44, 45	14	4.84
Scientific Instruments	38	19	6.57
Durable Goods	50	7	2.42
Retail	53–57, 59	25	8.65
Eating and Drinking Establishments	58	2	0.69
Entertainment Services	70, 78, 79	6	2.08
Health	80	5	1.73
Professional Services	87	8	2.77
All Others	All others	60	20.77
Total		289	100.0%

Panel E: Restatement Firms' Financial Characteristics in the Restatement Year

Variable	Mean	Std. Dev.	Q1	Median	Q3
Market Value ($ million)	3,878.4	12,292.2	62.9	289.8	1,786.8
Total Assets ($ million)	3,553.3	8,825.7	118.4	419.7	2,348.6
Sales ($ million)	2,628.3	6,392.3	81.3	349.0	1,671.3
Book Value ($ million)	1,016.7	2,363.6	29.3	156.2	821.1
Operating Income ($ million)	165.7	873.1	−7.3	15.6	132.9

(continued on next page)

TABLE 1 (continued)

Variable	Mean	Std. Dev.	Q1	Median	Q3
Book-to-Market Ratio	0.672	0.641	0.219	0.494	0.881
Leverage	0.187	0.192	0.004	0.139	0.318

This table describes the sample selection process of our restatement sample—289 restatements announced in the period 1997–2001—and the characteristics of the restatements and restatement firms.

[a] This restriction ensures that we have compensation data available at least for the second year after restatements.

[b] We keep only the first observation for firms with multiple restatements in the same year.

[c] Reason is per GAO (2003) report.

alternative ways: (1) the ratio of the dollar value of option grants to total compensation (*\$Option%*) and (2) the ratio of the number of option grants in shares scaled by total shares outstanding (*#Option%*):

$$\$Option\% = \frac{Annual\ option\ grants(\$)}{Total\ compensation(\$)} * 100$$

$$\#Option\% = \frac{Annual\ option\ grants(in\ shares)}{Total\ shares\ outstanding} * 100$$

For *\$Option%*, we use the dollar value of annual option grants provided by the company in its proxy statement.[6] The results are similar when we use the Black-Scholes value for the subsample of restatement firms that have this data available from ExecuComp.

We obtain executive compensation and management ownership data either from ExecuComp or directly from proxy statements. We are able to obtain compensation data for 125 restatement firms from ExecuComp, which contains executive compensation data for the S&P 1500 firms. For the remaining 164 restatement firms, we hand-collect compensation data, as well as the stock/option holding data from proxy statements. For each restatement firm, we collect compensation data for the four-year period [$t-1$, $t+2$] around the restatement announcement, where year t is the fiscal year in which the restatement was announced. Year $t-1$ is used as the benchmark to evaluate the change in option grants after restatements.[7]

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[6] Per SEC rule, firms must provide in their proxy statements an estimate of the value of option grants using one of two methods. The first is to calculate the potential realizable value of option based on a 5 percent and 10 percent annual rate of appreciation for the stock over the term of the option. The second is to use an option-pricing model, such as Black-Scholes. In our sample, the most common method is the 5 percent and 10 percent appreciation method, under which the option value is the present value of the difference between future stock price, which appreciates 5 percent and 10 percent every year, and the exercise price at the option expiration date. In our analyses, we use the potential realizable value based on the 5 percent annual appreciation rate for all firm-years.

[7] Because proxy statements are generally issued four or five months after the end of the fiscal year, the proxy statement for fiscal year $t-1$ might be issued after the restatement announcement for firms with restatements disclosed early in their fiscal year. Thus, the information provided in such proxy statements might be affected by restatements. To ensure that restatements do not affect option-based compensation in the benchmark year, if the proxy statement for year $t-1$ is filed after the restatement announcement, we use year $t-2$ as the benchmark year.

In Table 2, we provide distributional statistics of total CEO compensation and its components for restatement firms in the pre-restatement (year $t-1$) and post-restatement period (years $t+1$ and $t+2$). In year $t-1$, the mean total compensation is about $3.68 million. The largest component of compensation is option grants, which averages $2.4 million, almost ten times the magnitude of restricted stock grants. Quartile analysis reveals that both the value and number of option grants are highly skewed, with mean values far in excess of the medians. Similarly, the distribution of the value of restricted stock is also highly skewed, with a median value of zero across all years presented. Cash-based compensation is a smaller component of total compensation, with an average salary of $431,300 and an average bonus of $371,900. Because the results for changes in means and medians from $t-1$ to $t+2$ are qualitatively similar, we only provide results for changes in means for brevity. From $t-1$ to $t+1$, total compensation and its components do not change significantly. While total compensation does not change significantly from $t-1$ to $t+2$, there are offsetting changes between option grants and other components of compensation—the mean dollar value of option grants declines significantly ($p = 0.08$), while other components of compensation increase by a similar amount. However, of the changes in these other components, only the

TABLE 2

Distributional Statistics of Annual CEO Compensation and Its Components for Restatement Firms

Year Relative to Restatement Announcement		**Salary**	**Bonus**	**Stock Option Grants**	**Restricted Stock Grants**	**Other Comp.**	**Total Comp.**	***#Option%***
−1 (n = 286)	Mean	431.3	371.9	2,405.7	251.5	217.5	3,677.9	0.494
	Q1	200.0	0.0	0.0	0.0	1.2	391.4	0.000
	Median	316.0	112.5	283.0	0.0	15.2	1,164.2	0.110
	Q3	583.9	382.5	2,039.3	0.0	136.5	3,435.7	0.413
+1 (n = 271†)	Mean	483.6	422.1	2,347.5	323.4	256.6	3,833.1	0.544
	Q1	247.7	0.0	0.0	0.0	3.8	522.6	0.000
	Median	397.7	133.0	362.5	0.0	20.6	1,233.8	0.158
	Q3	650.0	434.2	2,382.7	0.0	120.2	4,206.4	0.536
+2 (n = 286)	Mean	503.8	393.6	1,948.9	393.9	424.0	3,664.3	0.369
	Q1	255.0	0.0	0.0	0.0	4.4	442.4	0.000
	Median	400.0	100.0	118.3	0.0	21.1	1,035.6	0.081
	Q3	700.0	447.7	1,149.6	0.0	128.7	3,520.1	0.374
p-value for the difference in means between years $t-1$ and $t+2$		0.033	0.484	0.078	0.993	0.182	0.858	0.033

This table reports descriptive statistics of CEO compensation and its components in the pre- and post-restatement periods for restatement firms. All variables are measured in $000, except for *#Option%*, which is the number of option grants (in number of shares) scaled by total shares outstanding, in percentage. The two-sided p-values are based on t-statistics for the difference in the means. (Because the variables are highly skewed, we take logs and then compute t-statistics.)

[†] Because we focus on year $t+2$ in our main analyses, we require all observations of sample or control firms to have compensation data in year $t+2$. Some of these observations have missing compensation data in year $t+1$, resulting in a smaller sample in year $t+1$.

increase in salary is significant ($p = 0.03$).[8] Consistent with the decline in the dollar value of option grants, we also provide evidence that option grants as a percentage of outstanding shares significantly decline from $t-1$ to $t+2$ ($p = 0.03$, two-sided).

Overall, these findings suggest a shift from incentive-based compensation to fixed compensation for restatement firms. The next section provides formal tests of this structural change.

IV. CHANGES IN CEO OPTION-BASED COMPENSATION AFTER RESTATEMENTS

Research Design

To test H1, we adopt a difference-in-difference approach. We first compare the pre- and post-restatement levels of restatement firms' CEO option grants to calculate the change in option grants around restatements. This change controls for the impact of time-invariant firm characteristics on CEO compensation structure, such as industry membership. Then we compare this change to the change in option grants for control firms' CEOs over the same period. Comparing restatement firms with control firms is necessary because of the temporal trend in CEO compensation structure over our analysis period (Murphy 1999). Following Core and Larcker (2002), we identify a control sample by using all ExecuComp firm-years that have the required data over the period 1997–2001, but are not included in our restatement sample. For each control firm, in year t, we measure option grants in the year before and the two years afterward, and calculate the change in option grants as the corresponding difference.

Firm characteristics can change around earnings restatements. For example, firms become smaller and less profitable. Such changes can potentially confound our analyses. To address this issue, we use the following OLS regression to control for the impact of other determinants of stock-based compensation:

$$\Delta Option\_Grants = \alpha_0 + \alpha_1\ Restatement + \beta \Delta Controls + Year\ Dummies + \varepsilon \qquad (1)$$

where $\Delta Option\_Grants$ is defined as the difference in *\$Option%* or *#Option%* between the post- and pre-restatement periods. *Restatement* is a dummy variable with value 1 for restatement firms and value 0 for control firms. *Controls* represent a set of variables known to influence stock-based compensation. Prior research finds that option-based compensation decreases with CEO stock and option ownership and financial leverage, and increases with firm size, growth opportunities (proxied by market-to-book ratio, R&D intensity), cash constraints, idiosyncratic risk, and current as well as past stock returns. Prior research also finds that the use of option grants is related to earnings constraints and cash compensation, but there is no conclusive evidence on the direction of the effect. To save space, we relegate details for the control variables—the argument underlying the predictions and the detailed measurement—to the Appendix. Because we investigate the change in stock-based compensation, we likewise use the change in control variables in our regression analyses. To be consistent with prior studies, we use the lagged changes of these controls (e.g., Core and Guay 1999). For example, when analyzing the change in option grants from year $t-1$ to year $t+2$, we use the difference in controls between $t-2$ and $t+1$, except as indicated otherwise. Finally, we include year dummies to control for year-specific effects.[9]

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[8] While the magnitude of the change in restricted stock appears large, it is not statistically significant different from zero. For sensitivity, we use the sum of restricted stock and option grants as the dependent variable and obtain similar results to those reported. We also analyze restricted stock grants separately in a multiple regression test and find insignificant results.

[9] For sensitivity, we also include industry dummies, leaving our results unaffected. Results are also unaffected when we only include one observation from each control firm to address any potential cross-sectional correlation in the error term.

Empirical Tests of Changes in Option-based Compensation

Table 3 reports the mean difference in option grants between the pre-restatement period (i.e., year $t-1$) and the post-restatement period (years $t+1$, $t+2$). Because it is unclear when restatement firms will change their CEOs' compensation structure, we analyze years $t+1$ and t+2. We provide analyses of both *$Option%* (Panel A) and *#Option%* (Panel B) in this and subsequent tables whenever appropriate. As shown in Panel A of Table 3, there is no significant difference in the change in *$Option%* between restatement and control firms for the period $t-1$ to $t+1$. Over this period, both restatement and control firms experience an increase in *$Option%*, although only the increase for control firms is significantly different from zero. In contrast, for the period $t-1$

TABLE 3

Univariate Analyses of Mean Changes in CEO Stock Option Grants for Restatement and Control Firms

Panel A: Option Grants Measured as the Value of CEO Annual Stock Option Grants Scaled by the Value of CEO Total Annual Compensation (*$Option%*)

	Mean Difference in *$Option%* between Years $t-1$ and $t+1$	Mean Difference in *$Option%* between Years $t-1$ and $t+2$
Restatement firms (1)	1.9%	−5.6%***
	(n = 271)†	(n = 286)
Control firms (2)	3.2%***	2.6%***
	(n = 7,329)†	(n = 7,343)
(1) - (2)	−1.3%	−8.2%***
(p-value)	(0.275)	(0.001)

Panel B: Option Grants Measured as the Number of CEO Annual Stock Option Grants (in number of shares) Scaled by Total Shares Outstanding (*#Option%*)

	Mean Difference in *#Option%* between Years $t-1$ and $t+1$	Mean Difference in *#Option%* between Years $t-1$ and $t+2$
Restatement firms (1)	0.07%	−0.13%**
	(n = 271)†	(n = 286)
Control firms (2)	0.01%*	0.00%
	(n = 7,329)†	(n = 7,343)
(1) - (2)	0.06%	−0.13%**
(p-value)	(0.450)	(0.032)

***, **, * Indicates significance at the 1 percent, 5 percent, and 10 percent levels, respectively, one-sided for restatement firms and the difference between restatement firms and control firms, and two-tailed for control firms.

† Because we focus on year $t+2$ in our main analyses, we require all observations of sample or control firms to have compensation data in year $t+2$. Some of these observations have missing compensation data in year $t+1$, resulting in a smaller sample size for the comparison between $t-1$ and $t+1$ than for the comparison between $t-1$ and $t+2$.

This table reports the mean difference in CEO option grants between the pre- and post-restatement period for restatement firms and control firms. Year *t* is the restatement announcement year. Control firms are non-restatement firms with compensation data from ExecuComp.

to *t*+2, restatement firms experience a decrease in *\$Option%* of 5.6 percentage points, which is significantly less than the change in *\$Option%* for the control sample, which actually increases its *\$Option%* by 2.6 percentage points over this same period.[10,11] Our inferences are the same when using the share-based measure of option grants. Specifically, for the period *t*−1 to *t*+2, restatement firms experience a decrease in *#Option%* of 0.13 percentage points, which is significantly less than the change in *#Option%* of 0.00 percentage points for the control sample.

Thus far, the results from our univariate analyses are supportive of our hypothesis that a restatement is associated with a subsequent reduction in the use of option compensation. Next, we use multiple regressions to examine whether other determinants of stock-based compensation drive our univariate results. Because we find no change in option grant usage over the period *t*−1 to *t*+1 in our univariate analyses, we focus our regression analyses on the period *t*−1 to t+2.

Panel A of Table 4 provides descriptive statistics of the variables used in the regression analyses (for both the sample and control firms). Over our analysis period, there is a decreasing trend in share ownership and cash constraint, and an increasing trend in option holdings, firm size, book-to-market ratio, earnings constraint, and leverage.

Panel B of Table 4 reports the correlations between the variables used in our regression analysis. Consistent with the univariate analysis, the changes in both *\$Option%* and *#Option%* are significantly negatively correlated with the ***Restatement*** dummy. The correlations between changes in option grants and the control variables are generally significant in the predicted directions. Also, relative to control firms, restatement firms experienced reduced equity holdings and cash constraint, and increased book-to-market ratio and earnings constraint. None of these correlations appears large enough to present collinearity problems. The largest correlation is between the size variable (Δ*Size*) and cash compensation (Δ*Cash Compensation*), which has a correlation coefficient of −0.47.

Panel A of Table 5 presents the results of regressing Δ*\$Option%* on the restatement dummy variable and controls. We report a coefficient of −7.8 on the restatement dummy variable (significant at the 1 percent level).[12] This finding implies that the change in option-based compensation as a percentage of total compensation is 7.8 percentage points lower for restatement firms than that for non-restatement firms over our analysis period, as predicted in H1. This change is economically significant; it implies that, holding total compensation constant, restatement firms reduce option grants by \$290,554 (i.e., 7.8 percent × \$3,677,900, which is the average total compensation in year *t*−1), relative to control firms.

Coefficients on the control variables for which we predict a sign are significant in the predicted direction, except that size, R&D, current returns, and cash compensation have insignificant coefficients and the coefficient on idiosyncratic risk has the sign opposite to our prediction. CEOs with high stock or option ownership and CEOs of firms with high leverage or idiosyncratic risk are awarded fewer option grants, while firms that have low book-to-market ratios, that have cash constraints, and that have high past returns award their CEOs more option grants.

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[10] The median decrease in *\$Option%* over the period *t*−1 to *t*+2 is significantly less for restatement firms than for control firms, based on a Wilcoxon test (p = 0.06, two-sided).

[11] Two years may seem to be a long period to elapse before restatement firms make significant changes in option grants. However, after a restatement, firms might need to institute other changes that would likely occur before changes in compensation structure. For example, a firm is likely to hire a new CEO and change its board, which take a non-trivial amount of time to complete.

[12] Inferences are unaffected after deleting outliers with the absolute value of R-student greater than 2, or using decile ranks for the change in options usage.

TABLE 4
Descriptive Statistics and Correlations of Variables for Restatement and Control Firms

Panel A: Descriptive Statistics (n = 5,948)

Variable	Mean	Std. Dev.	Q1	Median	Q3
Δ*$Option%*	2.401	33.684	−13.451	0.000	19.921
Δ*#Option%*	0.006	0.505	−0.070	0.000	0.113
Restatement	0.031	0.174	0.000	0.000	0.000
Δ*Shares_ Own (%)*	−0.703	3.239	−0.409	0.000	0.116
Δ*Exercisable _Options* (%)	0.133	0.820	−0.102	0.054	0.385
Δ*Unexercisable _Options* (%)	0.068	0.689	−0.125	0.009	0.249
Δ*Size*	0.284	0.450	0.041	0.240	0.506
Δ*B / M*	0.088	0.436	−0.107	0.023	0.197
Δ*R&D*	−0.001	0.025	0.000	0.000	0.000
Δ*Cash _ Constraint*	−0.017	0.148	−0.090	−0.011	0.057
Δ*Earn _ Constraint*	0.042	0.308	0.000	0.000	0.000
Δ*Lev*	0.018	0.119	−0.036	0.000	0.069
Δ*Idiosyncratic Risk*	0.009	0.024	−0.005	0.007	0.022
Δ*Current Return*	−0.115	0.789	−0.443	−0.074	0.290
Δ*Past Return*	−0.054	0.683	−0.403	−0.039	0.288
Δ*Cash Compensation*	−0.333	1.848	−0.434	−0.085	0.089

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TABLE 4 (continued)

Panel B: Spearman Correlations between Option Grants and Independent Variables, with p-values in Parentheses (n = 5,948)

	Δ$Option%	*Δ#Option%*	*Restatement*	*ΔShares_ Own (%)*	*ΔEx._ Options (%)*	*ΔUnex._ Options (%)*	*ΔSize*	*ΔB / M*	*ΔR&D*	*ΔCash_ Constraint*	*ΔEarn_ Constraint*	*ΔLev*	*ΔIdio. Risk*	*ΔCurrent return*	*ΔPast return*
Δ#Option%	**0.578**														
Restatement	**−0.059**	**−0.059**													
ΔShares _ Own (%)	**−0.080**	**−0.055**	−0.022												
ΔExercisable_ Options(%)	**−0.118**	**−0.132**	−0.019	**0.104**											
ΔUnexercisable_ Options(%)	**−0.086**	**0.071**	**−0.034**	0.009	**0.080**										
ΔSize	**0.056**	**−0.041**	0.019	**−0.123**	−0.080	**−0.075**									
ΔB / M	**−0.106**	**0.047**	**0.066**	**−0.036**	**0.008**	**−0.052**	**−0.066**								
ΔR&D	−0.017	**0.027**	**0.040**	0.003	0.007	0.019	**−0.103**	0.008							
ΔCash_ Constraint	**0.037**	0.011	**−0.051**	0.020	**0.028**	−0.002	−0.008	**−0.066**	**0.033**						
ΔEarn _ Constraint	**−0.074**	0.013	**0.095**	0.008	−0.004	**−0.061**	**−0.172**	**0.208**	**0.152**	0.023					
ΔLev	**−0.029**	0.011	−0.001	−0.003	−0.008	0.012	**0.071**	−0.015	−0.018	**0.189**	**0.046**				
ΔIdiosyncratic Risk	**−0.026**	**0.051**	**0.087**	0.023	**−0.067**	0.009	**−0.038**	**0.199**	**0.078**	0.012	**0.163**	**0.099**			
ΔCurrent return	**0.060**	**−0.027**	**−0.025**	**0.049**	0.018	**0.105**	**−0.064**	**−0.382**	**−0.041**	**−0.037**	**−0.221**	**−0.095**	**−0.042**		
ΔPast return	**0.059**	**−0.043**	−0.001	**0.042**	**0.027**	**0.041**	**0.049**	**−0.260**	**−0.084**	**0.076**	**−0.149**	**−0.095**	**−0.090**	**0.029**	
ΔCash Compensation	**−0.028**	**0.034**	−0.020	**0.066**	**0.069**	**0.101**	**−0.474**	**−0.027**	**0.129**	**0.040**	**0.050**	**−0.075**	**0.003**	**0.137**	0.002

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TABLE 4 (continued)

All means in Panel A are different from zero at the 1 percent level.

Items in bold in Panel B indicate significance at the 0.05 level.

Variable Definitions:

Δ$Option% = difference in the dollar value of annual CEO option-based compensation scaled by annual CEO total compensation (in percent) between year $t-1$ and $t+2$, where year t is the restatement year;
Δ#Option% = difference in option grants in number of shares scaled by total shares outstanding between year $t-1$ and $t+2$;
Restatement = 1 for restatement firms, and 0 otherwise;
Shares_Own (%) = CEO's ownership in shares scaled by outstanding shares;
Exercisable_Options (%) = CEO's exercisable options in shares scaled by outstanding shares;
Unexercisable_Options (%) = CEO's unexercisable options in shares scaled by outstanding shares;
Size = natural log of sales (in $million, Compustat data12);
B / M = book-to-market ratio, measured as book value (data 60) divided by market value (data25*data199);
R&D = research and development expense (data46) scaled by total assets (data6);
Cash_Constraint = common and preferred dividends (data127) plus net cash flow used in investment activities (data311) minus net cash flow from operations (data308), divided by total assets (data6);
Earn_Constraint = 1 if there is an operating loss (i.e., if data178 is negative), and 0 otherwise;
Lev = long-term debt (data9) divided by total assets (data6);
Idiosyncratic Risk = standard deviation of the residual from the market model using weekly returns over 12 months;
Current Return = accumulated monthly stock return for the current year;
Past Return = accumulated monthly stock return for the last year, and
Cash Compensation = sum of salary and bonus scaled by sales.

All control variables are measured as the difference Δ between years $t-2$ and $t+1$, except for current return, which is measured between years $t-1$ and t.

TABLE 5

Regression Analyses of Changes in CEO Option-Based Compensation

This table reports regression results of the following equations for the period t−1 to t+2, where t is the restatement announcement year:

$$\Delta Option\_Grants = \alpha_0 + \alpha_1 Restatement + \beta \Delta Controls + YearDummies + \varepsilon \quad (1)$$

$$\Delta Option\_Grants = \alpha_0 + \alpha_{1a} Restatement\_ExtantCEO + \alpha_{1b} Restatement\_NewCEO + \beta \Delta Controls + YearDummies + \varepsilon \quad (2)$$

Panel A: Impact of Restatement on Option Grants for Full Sample

		$\Delta \$Option\%$ (A)		**$\Delta \#Option\%$ (B)**	
Variable	**Predicted Sign**	**Coefficient Estimate**	**t-statistic**	**Coefficient Estimate**	**t-statistic**
Intercept	?	9.142	8.02***	0.116	6.68***
Restatement	−	−7.829	−3.17***	−0.164	−4.37***
$\Delta Shares\_Own$	−	−0.785	−5.94***	−0.008	−3.86***
$\Delta Exercisable\_Options$	−	−4.089	−7.83***	−0.075	−9.49***
$\Delta Unexercisable\_Options$	−	−4.447	−7.14***	−0.051	−5.38***
$\Delta Size$	+	−0.237	−0.21	−0.065	−3.91
$\Delta B/M$	−	−5.133	−4.54***	0.049	2.83
$\Delta R\&D$	+	−0.992	−0.06	0.353	1.35
$\Delta Cash\_Constraint$	+	7.267	2.48***	0.026	0.58
$\Delta Earn\_Constraint$	?	−3.363	−2.25**	−0.022	−0.95
ΔLev	−	−10.665	−2.88***	0.017	0.30
$\Delta Idiosyncratic\ Risk$	+	−74.343	−3.72	0.299	0.99
$\Delta Current\ Return$	+	0.253	0.40	−0.021	2.26
$\Delta Past\ Return$	+	2.022	3.00***	−0.016	−1.55

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TABLE 5 (continued)

Variable	Predicted Sign	Δ*$Option%* (A) Coefficient Estimate	Δ*$Option%* (A) t-statistic	Δ*#Option%* (B) Coefficient Estimate	Δ*#Option%* (B) t-statistic
Δ*Cash Compensation*	?	−0.241	−0.91	0.008	2.02**
n (restatement/control)		186/5,762		186/5,762	
Adj. R^2		0.068		0.045	

Panel B: Impact of Restatement on Option Grants Across New and Extant CEOs

Variable	Predicted Sign	Δ*$Option%* (A) Coefficient Estimate	Δ*$Option%* (A) t-statistic	Δ*#Option%* (B) Coefficient Estimate	Δ*#Option%* (B) t-statistic
Intercept	?	9.137	8.02***	0.116	6.68***
Restatement_ExtantCEO	−	−6.322	−1.84**	−0.161	−3.09***
Restatement_NewCEO	−	−9.355	−2.71***	−0.166	−3.17***
Δ*Shares_Own*	−	−0.788	−5.94***	−0.008	−3.86***
Δ*Exercisable_Options*	−	−4.113	−7.83***	−0.075	−9.49***
Δ*Unexercisable_Options*	−	−4.436	−7.14***	−0.051	−5.38***
Δ*Size*	+	−0.238	−0.21	−0.066	−3.91
Δ*B/M*	−	−5.121	−4.54***	0.049	2.83
Δ*R&D*	+	−1.238	−0.06	0.352	1.35
Δ*Cash_Constraint*	+	7.214	2.48***	0.026	0.58
Δ*Earn_Constraint*	?	−3.339	−2.25**	−0.022	−0.95
Δ*Lev*	−	−10.586	−2.88***	0.017	0.30

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TABLE 5 (continued)

Variable	Predicted Sign	Δ*$Option%* (A) Coefficient Estimate	Δ*$Option%* (A) t-statistic	Δ*#Option%* (B) Coefficient Estimate	Δ*#Option%* (B) t-statistic
Δ*Idiosyncratic Risk*	+	−73.892	−3.72	0.300	0.99
Δ*Current Return*	+	0.262	0.40	−0.021	−2.26
Δ*Past Return*	+	2.017	3.00***	−0.016	−1.55
Δ*Cash Compensation*	?	−0.236	−0.90	0.008	2.02**
n (restatement/control)		186/5,762		186/5,762	
Adj. R^2		0.068		0.045	

***, ** Indicates significance at the 1 percent and 5 percent levels, respectively (one-sided for variables with predicted signs, two-sided otherwise). The results for year dummies are omitted for brevity.

Variable Definitions:

Option_Grants = either *$Option%* or *#Option%*;

$Option% = dollar value of annual CEO stock option compensation scaled by annual CEO total compensation, in percent.;

#Option% = option grants in number of shares scaled by shares outstanding, in percent; and

Restatement_ExtantCEO (*Restatement_NewCEO*) = dummy variable equal to 1 if the restatement firm did not experience (experienced) CEO turnover during the analysis period, and 0 otherwise.

All other variables are defined in Panel A of Table 4.

Panel A of Table 5 also presents regression results of using $\Delta\#Option\%$ as the dependent variable; the inferences using this variable are the same as those based on $\Delta\$Option\%$. Specifically, we find that the change in *#Option%* for restatement firms is 0.16 percentage points lower for restatement firms than for non-restatement firms.

One complication that arises in our setting is that a restatement is frequently associated with CEO turnover (e.g., Desai et al. 2006). We find that approximately one-half of our restatement firms experience CEO turnover from year *t*–1 to *t*+2 (untabulated). We expect H1 to hold not only for extant CEOs, but also for new CEOs. Our premise for H1 is that restatements are related to CEO equity incentives that are "too high." These incentives became too high because of the accumulation of high option (or stock) grants over time. That is, the options granted to CEOs in the pre-restatement period are likely to be higher than the optimal level. Thus, if the options granted to new CEOs after restatements are at the optimal level, they are likely to be lower than the options granted to former CEOs, *ceteris paribus*. Furthermore, new CEOs might prefer more cash-based compensation in lieu of stock-based compensation because of the risk of further decline in the company's stock price subsequent to the restatement. On the other hand, because new CEOs are likely to have a lower level of ownership in the company than former CEOs, restatement firms may actually award new CEOs more option grants than those given to former CEOs (Gilson and Vetsuypens 1993). We control for this effect by including existing holdings.

To test whether the results from our main test of H1 hold for both extant and new CEOs, we estimate the following regression:

$$\begin{aligned}\Delta Option\_Grants = {} & \alpha_C + \alpha_{1a}\, Restatement\_ExtantCEO + \alpha_{1b}\, Restatement\_NewCEO \\ & + \beta\Delta Controls + Year\ Dummies + \varepsilon \qquad (2)\end{aligned}$$

where *Restatement_ExtantCEO* is a dummy variable equal to 1 if the restatement firm experienced no CEO turnover and *Restatement_NewCEO* is a dummy variable equal to 1 if the restatement firm experienced CEO turnover. Coefficients α_{1a} and α_{1b} thus capture the corresponding changes in option grant usage for these two groups, respectively. If H1 holds for both groups, then we expect both coefficients to be negative.

Panel B of Table 5 reports results of Regression (2). Consistent with H1, when using *$Option%*, we report a coefficient on *Restatement_ExtantCEO* of −6.3 that is significantly different from zero ($p = 0.05$) and a coefficient of −9.4 on *Restatement_NewCEO* that is also significant ($p = 0.01$).[13] The inferences are the same when using *#Option%*: the coefficient on *Restatement_ExtantCEO* is −0.161 and the coefficient on *Restatement_NewCEO* is −0.166, both significant at the 0.01 level. These results indicate that relative to control firms, restatement firms grant both extant and new CEOs fewer option grants after restatements.

Assessment of the Benchmark Year

As discussed earlier, our benchmark year, year *t*–1, is the year before the restatement announcement year. However, prior research (e.g., Burns and Kedia 2006; Efendi et al. 2007) uses the year prior to the earliest year restated as the benchmark year when investigating whether restatement firms have higher equity incentives than other firms. To test whether our results are sensitive to this alternative benchmark, we identify from press releases and SEC filings the fiscal year prior to the earliest year restated and conduct our analyses using this as our benchmark year. For convenience, we refer to this benchmark year as *t*–n. We first estimate model (1) in Table 5 for the period t–n to t+2 and find coefficients of −6.3 and −0.9 on the restatement dummy for changes in *\$Option%* and *#Option%*, respectively (untabulated). These results are qualitatively similar to those using $t-1$ as the benchmark year.

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[13] These two coefficients are not significantly different from each other: the p-value based on an untabulated F-test is 0.55.

We then examine whether restatement firms made any changes to option compensation from t–n to $t-1$, representing the longest possible period prior to the market discovering information about the restatement. Since the earliest year restated is the year of the announcement for about one-half of our sample firms, we conduct this analysis on the other half of our sample firms. Using the model from Panel A in Table 5, we report in Table 6 that restatement firms actually *increased* their option usage over this period. Using the dollar value of option grants, we find a coefficient of 8.9 on the restatement dummy, implying that restatement firms increased option usage by 8.9 percentage points more than control firms. We obtain similar inferences when using the number of option grants. These results imply that restatement firms became more aggressive with option usage during periods when their financial statements were misstated, therefore providing support for our assumption that restatement firms reduced options usage only after their agency problem became known.

Robustness Tests for the Change in Option Grants

We conduct the following series of sensitivity tests to check the robustness of our results for H1. For brevity, we do not tabulate these analyses.

- We expand our tests to include Top 5 executives other than the CEO and find that *\$Option%* and *#Option%* also decrease in the post-restatement period for these executives.
- We extend our analysis period to year t+3 and find further reductions in *Option%*.
- To ensure that the results are not driven by unidentified unusual events in year $t-1$, we use the average *\$Option%* in $t-2$ and $t-1$ as the benchmark when calculating the change in options usage, and find similar results.
- Restatements vary in the nature (i.e., technical or not, income-decreasing or not) and magnitude. Controlling for these characteristics does not affect results.
- Restatement firms likely experience corporate governance changes after restatements, and these changes may affect our results. We control for CEO/COB decoupling and find similar results.
- To further control for industry and year fixed effects, we estimate the model in Table 5 using two control firms from ExecuComp for each restatement firm, matched on two-digit SIC codes and year. The tenor of our results remains unchanged. This test also indicates that our results are not driven by economy-wide changes (e.g., Internet bubble).
- We measure the usage of option grants by the sensitivity of the value of option grants to both stock price (i.e., slope) and return volatility (i.e., convexity). We find that CEOs' option grants have a lower slope and convexity following a restatement, compared to control firms.

Within-Sample Analysis of Changes in Option Grants

While the above results indicate that, *on average*, restatement firms reduce options usage after the announcement of the restatement, not all restatement firms reduce option usage after restatement announcements.[14] To investigate why some restatement firms do not reduce options usage

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[14] In our sample, 42 percent (47 percent) of restatement firms reduce *\$Option%* (*#Option%*) from $t-1$ to t+2.

TABLE 6

Analyses of Changes in CEO Option Compensation from the Year Prior to the Earliest Year Restated to the Year Prior to the Restatement Announcement

This table reports regression results of the following equations for the period *t*–n to *t*–1, where *t* is the restatement announcement year and *t*–n is the year prior to the earliest year restated:

$$\Delta Option\_Grants = \alpha_0 + \alpha_1\ Restatement + \beta \Delta Controls + Year\ Dummies + \varepsilon \quad (1)$$

	Δ$Option% **(A)**		**Δ#Option%** **(B)**	
Variable	**Coefficient Estimate**	**t-statistic**	**Coefficient Estimate**	**t-statistic**
Intercept	3.165	3.11***	0.045	2.95***
Restatement	8.923	2.50***	0.152	2.92***
ΔShares_Own	0.005	7.73***	0.000	4.15***
ΔExercisable_Options	−7.438	−7.81***	0.061	4.31***
ΔUnexercisable_Options	−0.056	−32.47***	−0.001	−41.33***
ΔSize	−1.032	−0.47	−0.108	−3.27***
ΔB / M	−1.701	−0.65	0.185	4.68***
ΔR&D	15.714	0.70	1.229	3.64***
ΔCash_Constraint	−5.050	−1.68*	−0.154	−3.43***
ΔEarn_Constraint	2.512	1.37*	−0.015	−0.53
ΔLev	−7.486	−1.23	0.048	0.52
ΔIdiosyncratic Risk	−43.679	−1.55*	−0.188	−0.45
ΔCurrent Return	2.094	2.46***	−0.012	−0.92
ΔPast Return	0.558	0.72	−0.015	−1.28
ΔCash Compensation	−1.457	−3.51***	−0.004	−0.63
n (restatement/control)	67/5,580		72/5,584	
Adj. R^2	0.167		0.260	

***, **,* Indicates significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-sided tests. The results for year dummies are omitted for brevity.

Variable Definitions:

Option_Grants = either *$Option%* or *#Option%*;

$Option% = dollar value of annual CEO stock option compensation scaled by annual CEO total compensation, in percent; and

#Option% = option grants in number of shares scaled by shares outstanding, in percent.

All other variables are defined in Panel A of Table 4. The restatement firm sample is restricted to restatement firms with different *t*–n and *t*–1.

following the restatement announcement, we use the following logit model to examine the determinants of the likelihood of reducing option compensation:

$$\begin{aligned} Pr(\mathit{Reducing\ Option\ Grants}) = \alpha &+ \beta_1 \mathit{Option\%\_High}_{t-1} + \beta_2 \mathit{Tech\_Restatement} \\ &+ \beta_3 \mathit{Inc\_Restatement} + \beta_4 \mathit{Small\_Restatement} + \beta_5 \mathit{MktResponse} \\ &+ \beta_6 \mathit{CEO/COB\_Decouple} + \gamma \mathit{Controls} + \varepsilon \qquad (3) \end{aligned}$$

where the dependent variable is a dummy variable equal to 1 if the restatement firm reduced option grants from $t-1$1 to $t+2$, and 0 otherwise. We define this dummy variable alternatively based on *\$Option%* and *#Option%*. Besides the factors that might affect option usage, namely CEO turnover and the independent variables in model (2), which are included as controls here, we identify six additional explanatory variables, as discussed below.

While prior research finds that, on average, restatement firms had too high a level of equity incentives, we conjecture that this is more likely to be true for restatement firms that have high option grants prior to the restatement announcement. Accordingly, these firms are more likely to reduce option grants, compared to other restatement firms. To capture this within-sample variation, we construct an indicator variable, $\mathit{\$Option\%\_High}_{t-1}$ ($\mathit{\#Option\%\_High}_{t-1}$), which equals 1 for restatement firms with *\$Option%* (*#Option%*) in the top quartile of the sample distribution in year $t-1$.[15] We predict a positive sign on the coefficients of these variables.

As we argue in Section II, restatement firms will change CEO compensation structure only when doing so yields a net benefit. Because the net benefit is likely to be lower when the restatements are technical, income-increasing, or small in dollar magnitude, we expect that firms that have restatements with these characteristics are less likely to reduce *Option%*. We collect detailed information about the restatements—their nature as well as the direction and magnitude of their impact on earnings—from restatement firms' press releases or 10-Ks, whenever possible, and we construct three indicator variables to capture restatement-specific effects: *Tech_Restatement* for technical restatements, *Inc._Restatement* for income-increasing restatements, and *Small_Restatement* for firms with restatement magnitude in the bottom quartile of the sample distribution. See the legend to Table 7 for variable measurement. We predict negative coefficients on these variables.

The market response to the restatement announcement might also capture the extent of the agency problem related to suboptimal option usage and firms' incentive to reduce it. *MktResponse* is a dummy variable equal to 1 for firms with extremely negative (bottom quartile) size-adjusted abnormal returns for the three days centered around the announcement date of the restatement, and 0 otherwise. We predict a positive sign on the coefficient of this variable.

We also investigate whether an improvement in corporate governance, along the dimension of decoupling the joint CEO/Chairman of the board (COB) position, can facilitate the change in CEO compensation structure. Prior research suggests that when corporate governance is weak, firms award CEOs excessive option grants (e.g., Bebchuk et al. 2002) and are more likely to have accounting frauds (Dechow et al. 1996; Erickson et al. 2006). It seems plausible, therefore, that restatement firms that experience improvement in the dimension of decoupling the joint CEO/COB position are more likely to reduce option grant usage. Thus, we expect that firms decoupling the joint CEO/COB position are more likely to reduce option grants. *CEO/COB_Decouple* is a dummy variable equal to 1 for firms that had the joint CEO/COB position in year $t-1$ and decoupled it by year $t+2$.

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[15] The inferences are the same if we use continuous values for these and other variables.

TABLE 7

Cross-Sectional Analysis of Changes in CEO Option Compensation

This table reports the results from the following logit regression:

$$\begin{aligned} Pr(Reducing\ Option\ Grants) = {} & \alpha + \beta_1 Option\%\_High_{t-1} + \beta_2\ Tech\_Restatement + \beta_3\ Inc\_Restatement \\ & + \beta_4\ Small\_Restatement + \beta_5\ MktResponse + \beta_6\ CEO/COB\_Decouple \\ & + \gamma\ Controls + \varepsilon \quad (3) \end{aligned}$$

		Indicator for Reduction in *\$Option%*		**Indicator for Reduction in *#Option%***	
Variable	**Predicted Sign**	**Coefficient Estimate**	**p-value (two-sided)**	**Coefficient Estimate**	**p-value (two-sided)**
Intercept	?	−2.782	0.001	−4.335	0.001
$\$Option\%\_Hight_{t-1}$	+	2.406	0.001		
$\#Option\%\_High_{t-1}$	+			4.703	0.001
Tech_Restatement	−	−0.229	0.678	−0.246	0.655
Inc._Restatement	−	−1.992	0.002	−0.807	0.159
Small_Restatement	−	0.960	0.111	0.663	0.224
MktResponse	+	0.515	0.349	0.642	0.271
CEO / COB_Decouple	+	0.340	0.423	−0.707	0.156
Control variables		Yes		Yes	
n		152		154	
Pseudo Adj. R^2		0.441		0.538	

The dependent variable is a dummy variable equal to 1 if the restatement firm reduced option grants from $t-1$ to $t+2$, and 0 otherwise, defined alternatively based on *\$Option%* and *#Option%*.

Variable Definitions:

$\$Option\%\_High_{t-1}$ ($\#Option\%\_High_{t-1}$) = indicator variable equal to 1 for restatement firms with *\$Option%* (*#Option%*) in the top quartile of the sample distribution in the year prior to the restatement announcement;

Tech_Restatement = dummy variable equal to 1 for technical restatements; technical restatements refer to those related to SAB No. 101, in-process R&D, and other restatements that we deemed to be not clearly in violation of GAAP;

Inc._Restatements = dummy variable equal to 1 for restatements in which the restated earnings are the same as or lower than original earnings; there are 43 restatements in our sample where the originally reported numbers are the same or lower than the restated earnings;

Small_Restatement = dummy variable equal to 1 for restatements in the bottom 75 percent of the magnitude of restatements; restatement magnitude refers to the dollar magnitude of the restatement, scaled by total assets in year $t-1$;

MktResponse = dummy variable equal to 1 for restatement firms with extremely negative (bottom 25 percent) size-adjusted returns for a three-day window around the restatement announcement;

CEO / COB_Decouple = dummy variable equal to 1 if the restatement firm had the joint CEO/COB position in year $t-1$ and decoupled this position by year $t+2$; and

Size = log of total assets in year $t-1$.

Controls represent all control variables used in Table 5 and the CEO turnover indicator variable, which equals to 1 if there is a new CEO in $t+2$ compared to $t-1$. Please refer to Table 5 for the list of the control variables.

We report the results of the logit regression in Table 7, first based on *$Option%* and then based on *#Option%*.[16] We find that the likelihood of reducing option usage is higher for restatement firms that have a higher level of options usage in year t−1. This relation also holds for firms with income-decreasing restatements, but only in the analysis using *$Option%*. We find no evidence that the likelihood of reducing option usage is higher for restatement firms that experience improvement in corporate governance.

V. EFFICACY OF OPTION COMPENSATION CHANGES

Subsequent Performance Improvement

Our findings of reduced option grant usage suggest that, *ex ante*, there is a net economic benefit associated with a more optimal compensation contract. Otherwise, rational firms would not make this costly adjustment (Core and Larcker 2002). In this section, we examine whether the reduction in CEO option-based compensation yields a net economic benefit *ex post*. In our setting, we argue that the reduction in option-based compensation is likely to mitigate restatement firms' agency problems related to the restatement and result in managerial decisions that are better aligned with shareholders' interests. If in the pre-restatement period too high a level of option-based compensation resulted in excessive investments in risky projects and a fixation on the short-term stock price rather than a focus on operating efficiency, then a more optimal level of option-based compensation can motivate managers to reduce excessive investments in risky capital projects, R&D, or marketing activities and/or to implement cost-cutting strategies. Since these excessively risky investments likely resulted in poor operating performance, a reduction in such investments should lead to improved operating performance. In addition, by decreasing earnings management incentives, the reduction in option-based compensation can induce managers to devote their efforts to productive activities rather than to earnings management (Demski et al. 2004). Therefore, if the recontracting is successful, then the reduction in CEO option-based compensation should increase operating performance. We formalize this prediction in the following hypothesis, stated in the alternative form:

> **H2:** Compared to matched control firms, restatement firms that reduce option-based compensation following a restatement will experience improved operating performance.

Primary Tests of H2

Because we observe that there were no significant changes in option grant usage until year *t*+2, we examine whether operating performance improved in year *t*+2 and afterwards. We define ROA as operating income (Compustat data13) scaled by average total assets,[17] and calculate abnormal ROA using a matched-firm approach, as suggested by Barber and Lyon (1996). For each restatement firm, we select a firm that has the same two-digit SIC code and closest ROA in year *t*+1. (Note that since the event of interest here is the change in option grant usage after the restatement and not the restatement itself, the benchmark year is thus one year before the occurrence of reduced option grant usage – year *t*+1.) For the restatement firms for which we are unable to find a matched firm using this approach, we choose a firm with the closest ROA without restrictions on industry membership, as suggested by Barber and Lyon (1996).

Table 8 presents the findings of our tests of the relation between changes in option grant usage

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[16] For the sake of brevity, we do not tabulate the results on control variables, which generally have insignificant coefficients except for firm size. Large firms are more likely to reduce option grants after restatement announcements.

[17] The results based on operating income after depreciation are qualitatively similar.

TABLE 8

Operating Performance after Changes in CEO Option-Based Compensation

	Predicted Sign	$t+2$	$t+2$ and $t+3$
Restatement firms with decrease in *$Option%*			
Mean	+	2.1%	5.6%
(p-value)		(0.037)	(0.008)
Median	+	0.6%	2.9%
(p-value)		(0.065)	(0.003)
n		115	106
Restatement firms with zero change or increase in *$Option%*			
Mean	?	−0.4%	−0.8%
(p-value)		(0.972)	(0.722)
Median	?	−0.9%	−2.3%
(p-value)		(0.101)	(0.113)
n		157	143

This table reports abnormal operating performance for restatement firms after the changes in CEO option-based compensation in year $t+2$ (t = restatement announcement year). We calculate abnormal ROA using a matched-firm approach, as suggested by Barber and Lyon (1996), where the matched firm is the firm in the same industry (two-digit SIC codes) with ROA closest to that of the restatement firm in year $t+1$.

$Option% is the ratio of the dollar value of annual CEO option compensation to total annual CEO compensation. p-values are one-sided for the subsample with reduced *$Option%*, and two-sided otherwise.

The tests of means are based on t-statistics and the tests of medians are based on Wilcoxon signed tests.

and abnormal ROA in years $t+2$ and $t+3$.[18] We provide results for those restatement firms that decreased *$Option%* and those that had no change or increase in it. ROA for the restatement firms that reduce *$Option%* is significantly greater than that for their corresponding matched firms. In the first (two) year(s) where we document a decrease in *$Option%* (i.e., year $t+2$, and years $t+2$ and $t+3$), these restatement firms significantly outperform their matched firms in ROA by a mean of 2.1 percent (5.6 percent).[19] Results based on medians are similar to those based on means.

To investigate what drives this performance improvement, we decompose ROA into profit margin (operating income/sales) and asset turnover (sales/assets). We find that the improvement in ROA is due to improvements in profit margin. The difference in profit margin between restatement firms with reduced *$Option%* and their matched firms in year $t+2$ is significant at the 5 percent level, while the difference in asset turnover is insignificant (untabulated). Thus, it appears that restatement firms that reduce option-based compensation focus on improving profit margin, which can be achieved reasonably quickly by cutting *excessive* investments in R&D, marketing expenditures, unprofitable investments, or other operating costs.

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[18] For year $t+1$, we find no differences in ROA between restatement firms and their corresponding matched firms, thus validating our matching procedure.

[19] Because most of the firms that experience a decrease in *$Option%* also experience a decrease in *#Option%*, the results are essentially the same when we conduct analyses based on the change in *#Option%*. In untabulated analyses, we find that the mean (median) change in ROA for firms with reduced number of option grants is 2.0 percent (0.7 percent) and 3.9 percent (2.9 percent) for year $t+2$ and years $t+2$ and $t+3$, respectively.

In contrast, for the restatement firms that do not reduce *$Option%*, we find no evidence of improved performance. The mean and median abnormal ROA for these firms are insignificantly different from zero in the two years after the benchmark year.[20]

As noted above, there is significant CEO turnover in our sample. To investigate whether CEO turnover drives the improved operating performance, we partition our sample of restatement firms with reduced *$Option%* based on whether they experienced CEO turnover and analyze abnormal ROA separately for firms with and without CEO turnover. Results (untabulated) for each group are quantitatively similar to those reported in Table 8. Thus, CEO turnover is not driving our ROA results.

Robustness Tests for H2

A concern with our ROA results is whether the act of reducing options itself leads to better performance or whether the underlying reasons for a firm to reduce options is what leads to better performance. That is, the ROA results reported in Table 8 are subject to a self-selection issue. To address this issue, we implement the Heckman (1979) two-stage procedure. In the first stage, we obtain the inverse Mills ratio from estimating the prediction model in Table 7. In the second stage, we include the inverse Mills ratio in a regression of ROA on an indicator variable equal to 1 for firms that reduced the dollar value of options. For the regression of changes in ROA from $t+1$ to $t+2$, we obtain a positive and significant coefficient of 0.029 ($p < 0.05$) on the option reduction dummy, while the coefficient on the inverse Mills ratio is insignificant (untabulated). In untabulated results for the regression of changes in ROA from $t+1$ to $t+2$ and $t+3$, we find a positive and significant coefficient of 0.067 ($p < 0.05$) on the option reduction dummy and an insignificant coefficient on the inverse Mills ratio. These results indicate that a self-selection bias, to the extent it exists, does not appear to affect our results.

We also perform additional sensitivity tests to control for CEO turnover, big bath write-offs, earnings management via accruals, and mean reversion of ROA, all of which leave our inferences unaffected. However, despite these robustness checks, we acknowledge that there are likely to be substantial changes to firm characteristics coincident to the change in compensation structure and that the performance results we document can be due in part to these changes.

Reduction in Return Volatility

A key component underlying our argument for H1 and H2 is that restatement firms had excessive risky investments in the pre-restatement period due to high levels of equity compensation and that the reduction in option compensation in the post-restatement period decreased the level of these investments. Consistent with this argument, we document in the "Robustness Tests for the Change in Option Grants" section that restatement firms experience a reduction in convexity following a restatement. Accordingly, we expect that the restatement firms that reduce option compensation will experience a decrease in stock return volatility. Following prior research, we use return volatility as a proxy for risky investments (e.g., Rajgopal and Shevlin 2002) and test whether restatement firms reduce the riskiness of their investments following the reduction in option grants. Specifically, we use the same matched firms from our ROA tests (see the "Primary Tests of H2" section), calculate the abnormal volatility for our sample of restatement firms as the difference between restatement firms and their matched control firms in the standard deviation of weekly stock returns, and then calculate the change in abnormal volatility from year *t*+1 to years *t*+2 or *t*+3.

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[20] We also examine the market performance of these restatement firms using the methodology described in Barber and Lyon (1997). We find significantly positive abnormal returns in the two years after the release of year $t+2$ proxy statements for restatement firms with reduced *$Option%*, but not for those firms without reduced *$Option%*. However, it is difficult to draw reliable inferences from these results because they might be confounded by other firm-specific information in the proxy statements and because it is unclear when the capital markets learn about the compensation changes (Gaver et al. 1992).

In Table 9 we provide results from these tests. As expected, for restatement firms with a decrease in *$Option%*, we find a change in mean (median) abnormal volatility of −0.011 (−0.016) from *t*+1 to *t*+2 that is significant at the 5 percent (1 percent) level. We find similar results for the change in abnormal volatility from *t*+1 to *t*+3. Based on untabulated analyses, we find that the volatility of these restatement firms is greater than that of their matched firms in year *t*+1 (significant at the 1 percent level), but by year *t*+2, these restatement firms have volatility levels that are similar to those of their matched firms ($p = 0.71$). For restatement firms with a zero change or an increase in *$Option%*, however, we find no significant changes in abnormal volatility. These restatement firms have higher return volatility than do their matched firms in all years, all significant at the 1 percent level (results untabulated).

In sum, we document a decrease in return volatility for restatement firms with a reduction in CEOs' option grants. This finding, combined with the ROA results, suggests that these firms reduced the riskiness of their investments sufficiently to improve operating performance.

VI. SUMMARY AND CONCLUSIONS

We examine whether firms with earnings restatements recontract with their CEOs after a restatement to reduce option-based compensation and, if so, whether this results in improved

TABLE 9

Analysis of Changes in Return Volatility

	Predicted Sign	*t*+2	*t*+3
Restatement firms with decrease in *$Option%*			
Mean	−	−0.011	−0.011
(p-value)		(0.043)	(0.061)
Median	−	−0.016	−0.014
(p-value)		(0.009)	(0.007)
n		108	103
Restatement firms with zero change or increase in *$Option%*			
Mean	?	−0.000	−0.004
(p-value)		(0.958)	(0.464)
Median	?	0.001	−0.005
(p-value)		(0.857)	(0.373)
n		146	141

This table provides an analysis of the change in abnormal stock return volatility from year *t*+1 to the second (*t*+2) and third (*t*+3) year following restatement. We measure abnormal volatility as the difference in the standard deviation of weekly stock returns between restatement firms and their corresponding matched firms. See Table 8 for the choice of matched firms.

$Option% is the ratio of the dollar value of annual CEO option compensation to total annual CEO compensation. p-values are one-sided for the subsample with reduced *$Option%*, and two-sided otherwise.

The tests of means are based on t-statistics and the tests of medians are based on Wilcoxon signed tests.

operating performance. We predicate our study on the extant research that finds a positive relation between CEO equity incentives and the probability of earnings restatements, and on research that documents the costs of these restatements. Based on an analysis of 289 restatement firms over the period 1997–2001, we find that compared to control firms, restatement firms reduce the proportion of CEOs' total compensation that is option-based following a restatement. This result holds for both extant and newly hired CEOs. Thus, restatement firms are likely to view reducing option-based compensation as an important means of resolving their agency problem. Furthermore, we find evidence of improved operating performance following the reduction in option-based compensation. This result dismisses the alternative explanation that the decrease in option-based compensation results from the negative public perception of option usage. Under this alternative explanation, restatement firms will not experience improved performance. Further analysis indicates that the performance improvement is partly attributed to a reduction in stock return volatility, which reflects the underlying riskiness of these firms' investments. This result highlights that a significant economic benefit accrues to firms that adjust option-based compensation toward a more optimal level.

We contribute to the literature on the determinants of compensation structure by documenting that earnings restatements are strongly associated with subsequent reductions in CEO option-based compensation. In addition, our study complements Core and Larcker (2002), who use a setting in which managerial ownership levels are apparently too low and find that increases in managerial ownership are associated with improved firm performance. In contrast to Core and Larcker (2002), we utilize a setting in which managerial ownership levels are apparently too high and provide evidence that reducing these levels is beneficial to the firm.

This paper also complements studies investigating other monitoring changes in response to financial reporting failures (e.g., Farber 2005; Srinivasan 2005; Desai et al. 2006). Collectively, these studies suggest that firms improve a broad spectrum of governance mechanisms to reduce the agency problems associated with financial reporting failures. An important limitation of our study is that we treat changes in these other mechanisms as exogenous. Investigation of how changes in these governance mechanisms are jointly determined appears to be a fruitful avenue for future research.

APPENDIX
DESCRIPTION OF CONTROL VARIABLES

CEO Stock Ownership

Low stock ownership may indicate that the CEOs' interests are not optimally aligned with those of shareholders. Prior research finds that when a CEO's stock or option ownership is low, the firm tends to award this manager more option or stock grants (Core and Guay 1999; Bryan et al. 2000). To measure CEO ownership, we use the actual number of shares owned (*Shares _ Own*) and the number of both exercisable (*Exercisable _ Options*) and unexercisable options (*Unexercisable _ Options*), all scaled by shares outstanding. We predict negative signs on the coefficients of these variables.[21]

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[21] We choose not to use the dollar value of the equity holdings for two reasons. First, agency theory (e.g., Jensen and Meckling 1976) suggests that the percentage of shares owned by the CEO is an appropriate measure of agency problem and thus a good determinant of option-based compensation. Second, the value of existing holdings is confounded by the restatement. As discussed before, restatements are associated with large decreases in stock price, which decreases the value of CEOs' existing holdings. This may lead to an increase in *Option%* if shareholders want to maintain the same level of CEOs' equity incentives (in dollars). That is, the decrease in stock and option values biases against finding results consistent with H1.

Firm Size

Prior research argues that the optimal level of equity incentives increases with firm size (*Size*) (Core and Guay 1999). The larger the firm, the more complex it becomes, giving rise to agency conflicts. Also, CEOs of large firms tend to be wealthier and need more stock-based compensation to be motivated to work in the interests of shareholders. We therefore predict a positive sign on the coefficient of *Size*, which we measure as the natural logarithm of sales.

Growth Opportunity

It is difficult for shareholders to determine the appropriate corporate/operational strategy for a growth firm. Thus, it is likely that growth firms provide their managers with higher equity incentives to align their interests with those of shareholders (Smith and Watts 1992; Gaver and Gaver 1993). Consistent with prior research (Core and Guay 1999; Hanlon et al. 2003), we use the book-to-market ratio (*B/M*) and research and development intensity (*R&D*) to proxy for growth. We predict a negative coefficient on (*B/M*) and a positive coefficient on *R&D*.

Cash Constraints[22]

Compared to cash-based compensation, such as salary and bonus, stock-based compensation exerts relatively little pressure on a company's current cash flow. Thus, firms with cash constraints are more likely to use stock-based compensation (Yermack 1995; Dechow et al. 1996). As in prior research, we measure cash constraints (*Cash_Constraint*) as common and preferred dividends plus cash flows used in investment activities minus cash flows from operations, divided by total assets. We predict a positive sign on the coefficient of this variable.

Earnings Constraints

Firms with earnings constraints (*Earn_Constraint*) are also more likely to use option-based compensation because it was not expensed in our sample period if the exercise price is set at the stock price on the grant date. We use a dummy variable to indicate firms with an operating loss. However, because the empirical evidence on the relation between *Earn_Constraint* and stock-based compensation is mixed (Yermack 1995; Core and Guay 1999; Bryan et al. 2000), we make no directional prediction for the coefficient on this variable.

Leverage

If a CEO's stock-based compensation induces risk-taking, then shareholders receive a benefit over debtholders. It follows that shareholders will bear this debt agency cost in the form of higher interest. Therefore, stock-based compensation will be negatively related to debt. In addition, debt financing also serves as a monitoring mechanism that can reduce the need for stock-based compensation. Consistent with these arguments, Bryan et al. (2000) identify a negative relation between incentive-intensity and leverage (*Lev*). We measure *Lev* as long-term debt divided by total assets and predict a negative sign on the coefficient of this variable.

Idiosyncratic Risk

Prior research finds a positive relation between equity incentives and a firm's idiosyncratic risk (*Idiosyncratic Risk*) (e.g., Core and Guay 1999; Hanlon et al. 2003). When the uncertainty (i.e., idiosyncratic risk) surrounding a firm's performance is higher, it is more difficult for shareholders to monitor managers, thus making it more likely that the firm will use option-based compensation to motivate managers. We measure *Idiosyncratic Risk* as the standard deviation of the residual from the market model over the prior 12 months and predict a positive sign on its coefficient.

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[22] We also considered using free cash flow to control for the extent of agency problems, but because it is closely related to cash constraints, we opted not to use it.

Stock Returns

Prior research finds a positive relation between a firm's current returns (*Current Return*) and CEO compensation (Baber et al. 1996; Hanlon et al. 2003), consistent with CEOs being compensated for good firm performance. Hanlon et al. (2003) also find that firms with greater lagged stock returns (*Past Return*) grant more stock options to their CEOs. We likewise use these variables and predict positive signs on their coefficients.

Cash Compensation

With greater cash compensation—a proxy for outside wealth—managers can reduce their risk-aversion through better diversification, thus reducing the need of using options grants to encourage managers to invest in risky projects (Guay 1999). In support of this prediction, Hanlon et al. (2003) find that firms with greater CEO cash compensation (*Cash Compensation*) grant fewer stock options. However, this relation can be positive as firms might award managers additional cash compensation to offset the additional risk they bear through increased option grants. We therefore do not predict a sign on the coefficient on this variable.

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Are Asset Securitizations Sales or Loans?

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ABSTRACT: This study addresses whether asset securitizations are really asset sales or a form of secured borrowing, by estimating cross-sectional equity valuation regressions to assess whether the stock market treats securitized assets and liabilities held by a special purpose entity (SPE) as assets and liabilities of the sponsor-originator (S-O). Although all sample firms account for asset securitizations as sales, we find that the market views such SPE assets and liabilities as belonging to the S-O, i.e., the risk and rewards of ownership of the transferred assets reside with the S-O and not the SPE. Our findings are consistent with the explanation that sale-based asset securitizations enable SPE bondholders to retain priority in bankruptcy of the S-O while also enabling the S-O to obtain lower borrowing costs by implicitly guaranteeing the SPE's debt.

Keywords: *securitizations; off-balance sheet transactions; retained interest.*

Data Availability: *All analyses are based upon publicly available data.*

I. INTRODUCTION

Asset securitizations have become a large source of corporate financing. By the end of the third quarter of 2003, the asset securitization market was valued at $6.8 trillion, making it second in size only to U.S. treasuries, which were valued at $7.1 trillion (Bond Market Association 2004). Asset securitizations enable a firm to obtain cash for assets transferred to another entity. In a typical securitization, the sponsor-originator (S-O) sets up a special purpose entity (SPE), which borrows funds from a third party to purchase the securitized assets from the S-O. The SPE's borrowing is usually at an investment grade rate because the S-O guarantees in some form part or all of the debt issued by the SPE. If various conditions (described below) are

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met, then the S-O removes the securitized asset from its balance sheet and records a sale. The collapse of Enron, a frequent user (and abuser) of securitizations, focused the attention of securities regulators, accounting standard-setters, and the media on whether accounting recognition and disclosure requirements for securitizations were adequate for investors to understand the economic costs and benefits of the securitization transaction on the S-O. In particular, a key question is whether asset securitizations are really asset sales or a form of secured borrowing.[1]

In response to the Enron accounting crisis, a Congressional committee asked the Securities and Exchange Commission (SEC) to prepare a report to address accounting issues relating to off-balance sheet activities (SEC 2005). Although by Congressional mandate the report focuses on asset securitizations and special purpose entities, the SEC report broadens the scope to include a number of transactions that receive degrees of off-balance sheet treatment, including pensions and leases. The key issue relating to these transactions is indeed similar to those relating to asset securitizations, in particular whether risks and rewards of ownership have been transferred from the firm to its employees and retirees (pensions) or to a lessee (leases). The pension question has been studied by Landsman (1986), employing a research design we adapt to our present study.

The research question we address is whether the stock market treats securitized assets and liabilities held by an SPE as assets and liabilities of the S-O. We do so by estimating cross-sectional equity valuation models for a sample of 297 S-O firm-year observations representing 112 firms that disclose securitization information in their financial statements in 2000–2004. The key valuation model is one that includes measures of the S-O's assets and liabilities, estimates of the SPE's assets and liabilities, and S-O income. This analysis requires us to restate the S-O's assets, liabilities, and income as if no sale had taken place, i.e., as if the SPE's operating activities are consolidated with those of the S-O. If the market views the SPE as a truly separate entity, then its assets and liabilities will not be priced in such a valuation equation. If the converse is true, then the SPE assets and liabilities will be priced as if they belong to the S-O. We find that the market views the SPE assets and liabilities as belonging to the S-O, i.e., the risk and rewards of ownership of the transferred assets reside with the S-O and not the SPE. To ascertain whether our results could simply be an artifact of scale, we conduct a bootstrapping simulation that controls for scale by randomly assigning size-adjusted SPE assets and liabilities from one S-O to another. Evidence from the simulations suggests that scale bias is an unlikely explanation for finding the market views SPE assets and liabilities as belonging to the S-O.

We also test whether the amount of "retained interest" arising from asset securitization transactions affects the market's perception of the degree to which risk has been transferred to the SPE. Retained interest is a common means by which bankruptcy of the SPE is made a remote prospect, and it therefore serves as a substitute for an implicit guarantee of the SPE's debt. Although we find for the typical securitization the market values SPE assets and liabilities as if they are assets and liabilities of the S-O, retained interest could, on the margin, affect the market's perception of risk retention by the S-O. To allow for this possibility, we estimate an equation that permits cross-sectional variation in valuation coefficients as a function of the amount of retained interest. The results indicate the market views asset securitizations by both high and low retained interest S-O firms as incomplete risk transfers.

Our study adds to the small, growing body of research examining accounting issues relating to asset securitizations. Dechow et al. (2004) and Shakespeare (2004) address questions regarding whether managers engage in asset securitizations partly to manage reported earnings. Nui and

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[1] Bond rating agencies, including Moody's Investors Service (2002), have expressed concern that accounting for asset securitizations that permit sale accounting treatment results in financial statements that present a misleading picture of the credit strength of companies.

Richardson (2006) show that off-balance sheet debt related to asset securitizations has the same risk relevance as recognized debt for explaining market measures of risk (i.e., CAPM beta). For a sample of banks, Chen et al. (2007) shows that the type of securitized assets will affect risk transfer.

Our study differs significantly from Nui and Richardson (2006) on several important dimensions. First, Nui and Richardson (2006) show that the SPE debt has, on average, the same risk-relevance for explaining CAPM beta as the S-O debt. Our study complements this picture by showing that not only are the SPE liabilities valued by the market similarly to recognized S-O liabilities but the SPE assets also are valued by the market similarly to recognized S-O assets.[2] Chen et al. (2007) address a research question that is similar to ours in that it focuses on the role played by retained interest in asset securitizations. The study differs from ours in that it does not address how securitizations are linked to S-O equity valuation and, by design, it is limited to a small subset of S-Os that use asset securitizations.

There are a number of reasons why S-Os might wish to account for transactions that are economically secured borrowings as sales. One possibility is that sale accounting is endogenous to the risk-structuring process. As explained more fully below, if the transaction were accounted for as a secured borrowing instead of a sale, the priority of the SPE's creditors' claims might be placed in jeopardy if the S-O were to face bankruptcy. The principle conclusion from the economic analysis we present below is that securitizations enable firms to mitigate bankruptcy costs associated with other forms of direct borrowing. The results from our study provide support for why sale-based asset securitizations are used in lieu of other forms of financing/accounting combinations.

The remainder of the paper proceeds as follows. Section II provides background information concerning asset securitization, including a description of the salient institutional features and the accounting requirements. Section III discusses the economic theory of asset securitizations, which is the basis for our empirical tests that are described in Section IV. Section V describes our data and sample and how we consolidate the SPE and S-O to create accounting amounts needed for our estimations and tests. Section VI presents the findings, and Section VII presents a summary and concluding remarks.

II. BACKGROUND

In a typical securitization transaction, an S-O transfers a cash flow stream generated by a pool of financial assets such as mortgages, loans, and leases to an SPE. The SPE finances the transfer by borrowing from financial institutions and other outside investors. These lenders are repaid by the SPE from the cash flows generated by the securitized financial assets. The S-O usually retains a portion of the pool of securitized financial assets, which is commonly referred to as the retained interest. If certain conditions described below are met, then the transfer of assets from the S-O to the SPE can be treated as a "sale" by the S-O for accounting purposes. Furthermore, if additional conditions are met, then the SPE's balance sheet is not consolidated with that of the S-O, permitting the S-O to achieve off-balance sheet financing.

The rules governing accounting for asset securitizations in the U.S. are provided in Statement of Financial Accounting Standards No. 140 (FASB 2000; hereafter SFAS No. 140). SFAS No. 140 requires the firm to record the transaction as a sale if the S-O meets certain conditions relating to whether it is deemed to have relinquished control over the assets. First, the S-O unequivocally transfers legal title to the assets to the SPE, i.e., the assets have been isolated from the S-O in the case of bankruptcy. Second, SFAS No. 140 does not allow the S-O to enter an explicit agreement to buy back nonperforming assets.[3] Third, the SPE must be free to pledge or exchange the assets. If these and other sale accounting treatment conditions are met, then the S-O removes the securitized assets from its balance sheet and recognizes a gain or loss on the sale.[4]

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[2] It should also be noted that Nui and Richardson (2006) spans the period of both SFAS No. 125 and SFAS No. 140. In contrast, we limit our study exclusively to the SFAS No. 140 period since there are no disclosure requirements in the SFAS No. 125 period.

A related issue is whether the SPE's activities must be consolidated with those of the S-O. During our sample period, the U.S. accounting rules governing this issue were comprised of conditions stated in paragraph 35 of SFAS No. 140 and a series of pronouncements from the Emerging Issues Task Force (EITF) and views expressed by key SEC staff. These guidelines include a requirement that the SPE finance the transfer by issuing equity equal to at least 3 percent of the value of the total claims. If this and other requirements were not met, then the S-O was required to consolidate the SPE. This, of course, would effectively undo the sale accounting and bring back the transferred assets and the associated debt issued by the SPE onto the consolidated balance sheet.

Prior to SFAS No. 140, few companies provided details on their securitizations. After the issuance of SFAS No. 140, effective January 2000, S-Os are required to disclose separately, among other details, the total principal amount of financial assets that the S-O manages that have previously been securitized and continues to be involved with, gains from securitizations during the year, and the book value of any retained interests.

In the period following the collapse of Enron, in the U.S. the Financial Accounting Standards Board (FASB) issued guidelines for implementing SFAS No. 140, including Financial Interpretation No. 46 (Revised), *Consolidation of Variable Interest Entities* (FASB 2003; hereafter FIN No. 46R). FIN No. 46R focuses on more formally codifying the rules defining effective control that were previously covered by SEC and EITF pronouncements.[5] Presently, the FASB and the International Accounting Standards Board (IASB) together are deliberating changes to financial reporting requirements for accounting for asset securitizations. The data used in the present study are unaffected by these ongoing developments.

III. THEORETICAL ANALYSIS

To answer the accounting question of when it is appropriate for accounting purposes to treat a securitization as a sale and when it should viewed as secured borrowing it is necessary to examine the motives for securitization. Securitization is a form of financial intermediation. As with many issues in financial economics, it is useful to start from the perspective of a Miller-Modigliani (M&M) world in which firms can borrow and lend without incurring transaction costs or costs associated with financial default. In such a setting, firms with complex debt structures created to tap different debt clienteles would simply be shifting risks from one class of debt-holder to another. At the margin, financial transactions would create no value for the stockholders. In a costless M&M world, the only value created by debt financing is that it can reduce the firm's tax obligations. Aside from potential tax benefits, it is unclear how securitization adds value, particularly as the overall effect of the transactions tends to accelerate rather than delay the recognition of income. Moreover, it is even less clear in an M&M world why the accounting treatment should have any economic consequences.

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[3] SFAS No. 140 does allow S-O firms to repurchase certain assets through either calls or removal of account provisions (paras. 51–54 and 85–88). However, the repurchase ability is extremely limited. If the provisions give the S-O effective control over the transferred assets, then sale accounting is disallowed.

[4] The rules regarding derecognition of securitized assets are detailed and complex. For further discussion see Schipper and Yohn (2007).

[5] However, there is an explicit exception for securitization transactions, in which an SPE is considered a qualifying SPE under SFAS No. 140.

Moving away from an M&M world, the demand for securitization stems from two sources.[6] One is to provide a means of using a portfolio of risky assets to support the issuance of debt to institutions and other investors who require the securities they hold to be of investment grade, i.e., to meet the market's demand for relatively low risk debt. The other, more subtle, reason can be traced to the possibility that bankruptcy costs might arise caused by attempts by debt-holders to upset predetermined priorities in bankruptcy. In the U.S., Chapter 11 of the bankruptcy code certainly makes this possible. Securitization is a means to lower both costs. How these objectives can be met can be understood by briefly considering the securitization process.

As noted above, the S-O typically sets up an SPE that purchases part of the S-O's assets, or even undertakes originating transactions itself, and finances these transactions by issuing asset-backed debt instruments. The portfolio of assets to be used as security for the SPE's debts must be transferred from the S-O to the SPE in such a way that the courts will accept that a "true sale" has taken place in the event of the bankruptcy of the S-O.[7] A true sale creates a firewall between the claims of debt-holders in the S-O and debt-holders in the SPE by making it difficult for the S-O's debt-holders to seek recourse to the assets transferred to the SPE.[8] The firewall is the means of ensuring the debt-holders of the SPE that their claims will not be diluted by the claims of the S-O's debt-holders. The creation of such a firewall is straightforward if the assets are exchanged for cash on a non-recourse basis: The portfolio of transferred risky assets will have been replaced by cash, leaving the S-O's debt-holders with no reasonable grounds for complaint (assuming the transaction is at fair value).

The complication arises that the securitization must be done in a way that makes bankruptcy of the SPE a remote prospect.[9] As already noted, one reason for securitization is for the S-O to issue investment grade securities by protecting the SPE's debt-holders from dilution from the S-O's other creditors. An additional reason for setting up a bankruptcy-remote vehicle is that it will nearly always be the case that the transferred assets will be used as collateral for issuing different tranches of debt to suit the differing asset portfolio needs of investors.[10] The different tranches will have different priorities of claims, with the attendant possibility of costly legal proceedings in the event of default.[11] The SPE must therefore be set up in a manner that minimizes the possibility of such disputes. This can be done in a variety of ways. One way is to over-collateralize the debt of the SPE. Over-collateralization is equivalent to substituting equity for debt financing, with the attendant cost of forgone tax shields. Another is to offer some form of guarantee, either explicit or implicit. However, when offering a guarantee, it is critical not to put the sale at risk of being deemed a loan by the courts; otherwise, the securitization also would be at risk.[12] True sale status of the asset transfer will not be jeopardized by a loan guarantee that is provided by a genuine third party. More typically, the S-O provides the bulk of the credit enhancements.[13] This can take the form of the S-O providing the SPE with standby letters of credit. However, because standby letters of credit work only to smooth out fluctuations in the SPE's cash flows, it can at best only be a partial solution to the risk borne by the SPE's creditors.

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[6] The demand for and supply of asset securitizations is also affected by taxes. Tax consequences can arise for all the principal participants, including the S-O, SPE investors, and SPE creditors. Creditor rights and how a securitization is treated for financial reporting also could affect the S-O's tax liability. The tax rules governing asset securitizations are extremely complex, and depend on, among other things, whether the SPE is a legal trust or a corporation, whether the assets are pass-through debt certificates, and whether SPEs that are trusts are real estate investment trusts (Peaslee and Nirenberg 2001). There are also potential differences depending on tax jurisdictions involved in the transaction. Given the choice of organizational form and accounting method, tax liabilities will ensue. Consistent with these complex tax arrangements, Mills and Newberry (2005) provides evidence of the large variation in book-tax differences attributable to structured financing techniques, including securitizations. We do not model these tax effects.

[7] To achieve this in practice, the S-O obtains a true sale opinion from a lawyer stating that the SPE is bankrupt-remote from the S-O.

[8] There does not appear to be any case law directly addressing whether a contested securitization transaction is a true sale or a secured financing. The Chapter 11 bankruptcy of LTV Steel appears to be the first occasion in which a securitization structure has been unwound by the court and the decision subsequently challenged by an SPE creditor. For further details, see Stark (2002).

[9] For further analysis of how this might be achieved, see Gorton and Souleles (2006).

[10] Tranching is the process of transforming the risk-return profiles and credit risk exposures of an asset pool into different risk classes with differing seniority in bankruptcy and timing of default.

Implicit guarantees can provide a mechanism for the S-O to retain risk without jeopardizing the true sale status of the asset securitization. Such guarantees are likely to take the form of an understanding between the S-O and the SPE capital providers that the S-O will not let the SPE fail.[14] Other things equal, frequent securitizing S-Os develop reputations with their SPEs' debt capital providers for low cash flow and default risk (Gorton and Souleles 2006). As the reputation grows over time, so does the implicit guarantee that the S-O will absorb the risk associated with future SPE assets. For a sample of banks, Chen et al. (2007) shows that the type of securitized assets will affect the amount of risk transferred or the way in which risk is retained. For example, S-Os have more incentive and ability to provide implicit recourse for revolving loans because of their amortization provisions. Another form of credit enhancement the S-O can provide is for the S-O to purchase the most junior securities issued by the SPE. These junior securities are often referred to as the equity tranche.

A key difference between retained interest and other implicit guarantees is that the former is observable. Another important difference is that retained interest provides a costly signal concerning the quality of the transferred assets. Retained interest is likely to be a less important signal of risk retention for S-Os that have an established reputation for problem-free asset securitizations (from the perspective of SPE capital providers). In the case of such S-Os, capital providers will be willing to accept what are in effect non-contractual promises in lieu of specific contractual arrangements such as retained interest.

The key empirical matter this paper investigates is whether the accounting for securitization transactions covered by SFAS No. 140 properly reflects the underlying economics of the transactions. From an accounting perspective, such transactions involve removal of the securitized assets from the S-O's balance sheet and, if additional considerations described above are met, non-consolidation of the SPE's debt with that of the S-O. From an economic perspective, an economic true sale occurs if the risks and rewards associated with the transferred assets and the debt issued by the SPE reside fully with the SPE or a third party. However, economic true sales cannot take place because if risk and rewards are fully transferred to the SPE, it would not be possible for the SPE to be bankruptcy remote. Thus, we predict the market will value SPE assets and liabilities as if they are assets and liabilities of the S-O. We further predict that retained interest could, on the margin, affect the market's perception of risk retention by the S-O.

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[11] This problem could be avoided if the transferred assets could be broken up into different pools, each of which is assigned to a different SPE, with each pool of assets being used to back the issuance of a single homogeneous type of debt instrument. Legal squabbles over priority in the event of default would be avoided. However, splitting up the assets into legally distinct pools could be prohibitively costly or impossible. For example, even though the S-O could split the cash flows of a portfolio of bonds into interest and principal and place each in different firewalled entities, whether the firewalls would hold in the event of bankruptcy of one of the parties is an empirical matter about which little is known. Instead of simply transferring the legal title to the securitized asset to a single entity, the S-O would have to transfer the rights to the two types of cash flow to two different SPEs, thereby increasing the number of firewalls required.

[12] In addition, if the S-O agrees to buy back nonperforming assets, the S-O will not qualify for sale accounting.

[13] A primary reason why third-party credit enhancement is limited is that information asymmetry prevents the third party from being willing to offer such guarantees except at a prohibitively high cost. Of course, such a cost would reduce the incentive to use asset securitization as a means to issue debt.

[14] Citigroup's decision, reported in the *Wall Street Journal* (Sidel et al. 2007), to provide emergency support for seven of its SPEs is a good illustration of an S-O honoring its implicit guarantee to the creditors of the SPEs with whom it regularly contracts. Following this decision, Citigroup also decided to bring $49 billion of SPE assets and related liabilities onto its balance sheet.

Below, we address the question whether the market views the typical securitization transaction as a sale (risk transfer) or as a secured borrowing (little or no risk transfer) by estimating cross-sectional valuation regressions. We also examine whether the amount of retained interest affects the market's perception of the amount of risk transfer.

It is important to recognize that our analysis does not assume that securitization transactions are motivated by a desire to manage earnings.[15] Rather, the objective is to place a firewall around the assets that are to be used as collateral for the securities issued by the SPE. It is essential that the courts would recognize any transfer of assets from the S-O to the SPE as a genuine sale to maintain *ex post* the *ex ante* priorities between the different debt securities of the two entities. From this perspective, the accounting treatment matters if the choice of treatment influences the judgment of the court about the status of the sale in the event of a subsequent dispute.[16] It is an open issue whether continuing involvement of the S-O in the financial affairs of the SPE would affect the court's judgment about the status of the sale. We assume market participants take account of such uncertainties when valuing the S-O's stock.

IV. EMPIRICAL DESIGN

Baseline Estimating Equation

The study's primary research question is whether the market views asset securitization transactions as sales or a form of implicit borrowing by the S-O. The question can be rephrased as whether economically the risks and rewards associated with the transferred assets and the debt issued by the SPE reside with the S-O or the SPE. We address this question by estimating a cross-sectional valuation model similar to that used by Landsman (1986). That study addresses a different but economically similar research question, i.e., whether the market views defined benefit pension plan assets and obligations as assets of the sponsoring firm or whether the risks and rewards of pension activity are transferred to the firm's employees and retirees. That is, both the Landsman (1986) study and ours investigate property rights claims using cross-sectional valuation models. Our estimating equations are based on the Ohlson (1995) and Feltham and Ohlson (1995) models. All regressions are estimated using per share amounts.

We begin by estimating a benchmark regression, given by Equation (1), for the S-O firms, without consideration of SPE assets and liabilities, i.e., before consolidation.

$$MVE_{it} = a_0 + a_1\,ASSET_{it} + a_2 LIAB_{it} + a_3 NI_{it} + e_{it} \qquad (1)$$

where *MVE* is equity market value, *ASSET* and *LIAB* are book value of total assets and liabilities, and *NI* is net income, all measured on a per share basis for the S-O. *ASSET* and *LIAB* are measured at fiscal year-end, *MVE* is measured three months after the fiscal year-end, and the *i* and *t* subscripts denote firm and year, respectively. We estimate the benchmark regression for two related reasons. First, such a regression provides a basis for comparison with the subsequent regressions that incorporate measures of SPE assets and liabilities. Second, because our sample firms self-select to use asset securitizations, it is important to ensure self-selection does not affect inferences we draw from comparing S-O and SPE asset and liability coefficients. In the Appendix we examine factors that can be used to determine the magnitudes of the regression coefficients, using an adapted version of the Feltham and Ohlson (1995) model. However, since the data available for our study do not permit us to estimate the parameters of the Feltham-Ohlson linear information dynamics, we simply predict that the benchmark regression coefficients will have the following signs: $a_1 > 0$, $a_2 < 0$, and $a_3 > 0$.

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[15] See Dechow et al. (2004) and Shakespeare (2004) for further discussion and empirical evidence. We do not rule out the possibility that securitization also might be motivated by earnings management. Our point is simply that financial product design considerations provide a pervasive and sufficient reason for S-Os to be concerned about how the accounting is done.

[16] "Although not dispositive, courts have examined the transaction agreements for evidence of intent. How the originator accounted for the transfer on its books and records may be probative" (Stark 2002, 219).

Consolidation Procedure[17]

We employ the following procedure to consolidate the activities of the SPE back into the financial statements of the sponsor firm. First, we set the SPE assets equal to the off-balance sheet portion of the managed portfolio of financial assets that are disclosed in the S-O's financial statements. Ideally, we would obtain SPE asset and liability information directly from their financial statements. Unfortunately, these are not publicly available. Therefore, our procedure reflects an attempt to estimate SPE assets and liabilities from the S-O SFAS No. 140 disclosures. It also should be noted that SFAS No. 140 disclosures do not include assets that had previously been securitized but the S-O no longer manages (see SFAS No. 140, footnote 10).

The SPE liability to third parties is more difficult to estimate since SFAS No. 140 requires no specific disclosures of the SPE's outstanding liabilities. Given the data publicly available in SFAS No. 140 disclosures, it is possible to estimate the liability in two ways. One method would be to set the SPE liability equal to the SPE asset. This measure implies that the liability can never be higher than the assets yet to be collected. Such an estimate of the SPE's liability would, however, likely overstate the actual obligations of the SPE since securitizations are generally structured with retained interests. Moreover, it would not be possible to estimate a regression that includes our measure of SPE assets and this measure of SPE liabilities, since they would be equal. The alternative method is to set SPE liabilities equal to the SPE's assets minus the sum of the fair value of the retained interest and the carrying value of any other related amounts on the sponsor's balance sheet, i.e., servicing rights. This measure assumes that the sum of retained interest and servicing rights is equal to SPE owners' equity. This measure is likely closer to actual SPE liabilities and, unlike the first measure, can be used in a regression that also includes SPE assets.

Next, to avoid double counting, we restate S-O assets by removing fair value of the retained interests and any recognized servicing assets or liabilities from the balance sheet to state the S-O's assets on an "as if" no sale had occurred basis. Similarly, we restate S-O current net income by subtracting current gains from securitizations transactions. Note that our consolidation procedure is incomplete in that it is not possible from the SFAS No. 140 disclosures to discern the amount of interest receivable and payable from the securitized assets and liabilities. However, servicing income paid by the SPE to the S-O likely approximates the difference between the two interest amounts.

Consolidated Estimating Equation for the Typical Sponsor-Originator

Our test of the hypothesis whether the market views the typical asset securitization economically as a sale or secured borrowing is based on an expanded version of Equation (1). In particular, the new estimating equation, Equation (2), includes our estimates of SPE assets and liabilities and adjusted measures of S-O assets and net income described above.

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[17] We greatly appreciate discussions with Barbara Havlicek of Moody's about the best consolidation method.

$$MVE_{it} = a_0 + a_1 ADJ\_ASSET_{it} + a_2 LIAB_{it} + a_3 SPE\_ASSET_{it} + a_4 SPE\_LIAB_{it} + a_5 ADJ\_NI_{it} + e_{it} \tag{2}$$

where ADJ_ASSET equals the S-O assets, $ASSET$, minus the sum of retained interests, RET_INT, and servicing rights, SR. SPE_ASSET is managed SPE assets provided in the S-O's SFAS No. 140 disclosure. SPE_LIAB equals SPE_ASSET minus the sum of RET_INT and SR. Finally, ADJ_NI is the S-O's net income less gains (losses) from current year securitization activities.

Our predictions are as follows.[18] If the market views all asset securitizations as sales, then $a_3 = a_4 = 0$. On the other hand, assuming the economic characteristics of S-O and SPE assets and liabilities are the same and if the market views securitized assets and liabilities as assets and liabilities of the S-O (i.e., risk transfer has not taken place), then $a_3 = a_1$ and $a_4 = a_2$. An intermediate case is also possible, whereby the market views the typical securitization as representing a partial risk transfer, for which we predict $a_1 - a_3 > 0$ and $a_4 - a_2 > 0$.

It is important to note that because our sample of S-O firms' securitization transactions conforms with SFAS No. 140, and the SPEs' financial statements are not consolidated with those of the S-Os, we know that each sample S-O firm has less than a 50 percent stake in the quasi-equity tranche of its SPEs. Therefore, the stake retained by the S-O, i.e., retained interest, cannot be viewed as the difference between SPEs' assets and liabilities. Other things equal, we would predict the coefficient on SPE assets and liabilities to reflect the sample average proportional stake (less than 50 percent) of our S-Os in their SPEs' equity tranche. For example, if all sample S-Os had a 15 percent stake in their SPE quasi-equity securities, then we would predict $a_3 = 0.15a_1$ and $a_4 = 0.15a_2$. However, other things are not equal and retained interest need not correspond to the proportional share of the S-O's stake in their SPEs' equity securities. In particular, cash flow and decision rights (and risk bearing) need not be equal, and the degree to which they differ need not be the same for each securitization transaction a particular S-O has undertaken.

Random Assignments of SPE Assets and Liabilities

A common concern with cross-sectional valuation models stated in levels is correlated omitted variable bias, in particular scale bias (Barth and Kallapur 1996; Easton and Sommers 2003). Of particular concern in our study is that SPE assets and liabilities could appear to be priced as S-O assets and liabilities because of the effects of scale. To address this concern, we conduct the following randomization test. In particular, we randomly assign SPE assets and liabilities associated with a particular S-O as belonging to another S-O, scaling up (or down) the magnitude of the randomly assigned SPE assets and liabilities based on relative size—equity market value—of the "recipient" S-O and the "donor" S-O. We then estimate Equation (2) using the randomly assigned SPE assets and liabilities, and repeat this procedure 1,000 times. If scale is the cause of a_3 and a_4 differing from zero when estimating Equation (2) using actual data, then the mean coefficients from this bootstrapping procedure should look similar to those based on actual data and the bootstrapped a_3 and a_4 coefficients should consistently differ from zero. On the other hand, if scale has little effect on a_3 and a_4 estimated using actual data and there is no underlying relation between SPE assets and liabilities and S-O equity market value, then the mean a_3 and a_4 coefficients from the bootstrapping procedure will be zero.

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[18] For ease of exposition, we use the same notation for coefficients and error terms for each of the estimating equations. In all likelihood they differ across equations.

Estimating Equations Partitioning on Retained Interest

As explained in Section III, retained interest is a common feature of securitization transactions. Although we predict for the typical securitization the market will value SPE assets and liabilities as if they are assets and liabilities of the S-O, retained interest could, on the margin, affect the market's perception of risk retention by the S-O.[19] To allow for this possibility, we modify Equation (2) to permit cross-sectional variation in valuation coefficients as a function of the amount of retained interest. In particular, we include an indicator variable, *HI*, which equals 1 (0) for S-O firms with retained interest above (below) the median amount of retained interest as a proportion of SPE total assets, i.e., RET_INT/SPE_ASSETS, and interact *HI* with each of the regressors in Equation (2). This yields Equation (3):

$$\begin{aligned} MVE_{it} = {} & a_0 + a_1 ADJ\_ASSET_{it} + a_2 LIAB_{it} + a_3 SPE\_ASSET_{it} + a_4 SPE\_LIAB_{it} + a_5 ADJ\_NI_{it} \\ & + a_6 HI + a_7 HI^{*}ADJ\_ASSET_{it} + a_8 HI^{*}LIAB_{it} + a_9 HI^{*}SPE\_ASSET_{it} \\ & + a_{10} HI^{*}SPE\_LIAB_{it} + a_{11} HI^{*}ADJ\_NI_{it} + e_{it} \end{aligned} \tag{3}$$

Our prediction that retained interest can, on the margin, affect the valuation model is based on the assumption that firms with relatively low retained interest do not compensate SPE capital providers by providing higher amounts of implicit guarantees. If this assumption holds, then we predict that high retained interest S-O firms will be valued as if there is less risk transfer than for the low retained interest firms. That is, we predict the incremental coefficients on SPE_ASSET and SPE_LIAB, a_9 and a_{10}, are positive and negative, respectively. We have no predictions for the remaining incremental coefficients.

V. SAMPLE AND DATA

We used the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system to search the 10-K forms of all firms filing with the SEC during the period December 2000 to January 2004 inclusive. The choice of time period reflects the date after which SFAS No. 140 became effective, and hence the date after which the securitization disclosure information needed to conduct the study became available. We identify all firms that (1) are identified as S-Os by reason of having SFAS No. 140 disclosures, and (2) their SFAS No. 140 disclosures include the total principal amount of financial assets that the S-O manages as of fiscal year-end that have previously been securitized. This yields a sample of 297 firm year observations representing 112 firms. When a sample firm does not disclose amounts for retained interest, servicing rights, and gains on sale, we assume that these amounts are immaterial and set these variables to zero.

Because we estimate all regressions on a per share basis, all variables described below are deflated by common shares outstanding three months after year-end (Compustat data item 61).[20] Following common practice to ensure stock prices reflect information in financial statements, we define the dependent variable, *MVE*, as price three months after the year-end (data item 14) multiplied by common shares outstanding three months after year-end (data item 61). We measure

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[19] In principle, other explicit features of asset securitization transactions such as the type of assets transferred also could affect the market's perception of the degree of risk transfer. Because SFAS No. 140 disclosures do not permit us to determine the terms of the securitization transactions, we focus instead solely on the relative size of retained interest. Although SFAS No. 140 requires that firms disclose categorical asset class information, in practice, the information is either not disclosed or is done so in too unsystematic a fashion to enable us to include such information in our regressions.

[20] We also estimated all regressions using unscaled data. All experimental inferences are unchanged.

S-O total assets and liabilities, *ASSET*, and *LIAB*, as data items 6 and 181, and net income, *NI*, as data item 172. The remaining variables, *ADJ_ASSET*, *SPE_ASSET*, *SPE_LIAB*, and *ADJ_NI*, are as defined in the consolidation procedure section above.

Tables 1 and 2 present sample summary statistics and correlations for the variables used in Equations (1)–(3), together with the two variables used to construct some of the independent variables, retained interest (*RET_INT*) and servicing rights (*SR*). Table 1 indicates that consolidation of the S-O and SPE balance sheets has a substantial economic effect. For example, mean (median) SPE assets and liabilities, *SPE_ASSET* and *SPE_LIAB*, are 46.44 and 40.05 (9.67 and 8.32); mean (median) S-O assets and liabilities, *ASSET* and *LIAB*, are 118.33 and 104.65 (98.25 and 80.15). In terms of means, consolidation increases total assets and liabilities by more than a third. Table 1 also indicates that the mean and median ratios of retained interest, *RET_INT*, to SPE

TABLE 1

Descriptive Statistics for 297 Sponsor Firm Observations

Variable	Mean	Median	Std. Dev.	25%	75%	Min.	Max.
MVE	27.15	22.125	20.38	11.90	39.71	0.035	104.00
ASSET	118.33	98.25	103.35	35.26	176.41	1.92	526.93
LIAB	104.65	80.15	99.16	21.69	163.22	1.43	483.43
ADJ_ASSET	111.94	88.78	99.55	32.09	164.23	0.92	507.61
SPE_ASSET	46.44	9.67	131.24	3.15	35.73	0.01	1,238.91
SPE_LIAB	40.05	8.32	110.95	2.41	28.44	−9.34	995.42
NI	1.06	1.29	3.06	0.21	2.34	−22.65	12.77
ADJ_NI	−0.17	0.92	7.03	−0.15	2.12	−68.15	8.90
RET_INT	5.08	0.92	18.81	0.26	3.49	−1.18	203.01
SR	1.31	0.00	6.76	0.00	0.17	−13.44	49.69
RET_INT to SPE_ASSET	0.18	0.10	0.35	0.04	0.20	−0.02	3.62
Ret_INT to ASSET	0.07	0.01	0.14	0.002	0.06	−0.008	0.71

Variable Definitions:

MVE = price 3 months after the year-end (data item 14) multiplied by common shares outstanding 3 months after year-end (data item 61);
ASSET = data item 6 from Compustat;
LIAB = data item 181 from Compustat;
ADJ_ASSET = *ASSET* less *RET_INT* and *SR*;
SPE_ASSET = managed loans off-balance sheet disclosed in the financial statements;
SPE_LIAB = *SPE_ASSET* less *RET_INT* and *SR*;
NI = data item 172 from Compustat;
ADJ_NI = *NI* less gains (losses) from current year securitization activities;
RET_INT = retained interests from securitization transactions;
SR = servicing rights from securitization activities; and
Price = price 3 months after the year-end (data item 14).

All variables are measured on a per share basis, by deflating by common shares outstanding 3 months after year-end (data item 61).

TABLE 2
Correlations

	MVE	*ASSET*	*LIAB*	*ADJ_ASSET*	*SPE_ASSET*	*SPE_LIAB*	*RET_INT*	*SR*	*NI*	*ADJ_NI*
MVE	1.00	0.477	0.455	0.516	−0.130	−0.135	−0.150	0.112	0.525	0.269
ASSET	0.479	1.00	0.998	0.974	0.212	0.193	0.197	0.393	0.323	−0.120
LIAB	0.445	0.991	1.00	0.972	0.215	0.197	0.198	0.383	0.305	−0.126
ADJ_ASSET	0.521	0.985	0.976	1.00	0.011	0.003	−0.023	0.232	0.347	0.080
SPE_ASSET	−0.174	0.282	0.290	0.207	1.00	0.995	0.932	0.483	−0.149	−0.829
SPE_LIAB	−0.166	0.271	0.280	0.200	0.983	1.00	0.898	0.413	−0.166	−0.797
RET_INT	−0.335	0.033	0.037	−0.054	0.719	0.629	1.00	0.574	−0.109	−0.870
SR	0.116	0.460	0.476	0.429	0.212	0.173	0.101	1.00	0.126	−0.590
NI	0.685	0.467	0.450	0.464	0.024	0.013	−0.075	0.210	1.00	0.450
ADJ_NI	0.646	0.336	0.319	0.382	−0.213	−0.206	−0.292	0.046	0.831	1.00

Pearson (Spearman) correlations above (below) the diagonal.

Variable Definitions:

MVE = price 3 months after the year-end (data item 14) multiplied by common shares outstanding 3 months after year-end (data item 61);
ASSET = data item 6 from Compustat;
LIAB = data item 181 from Compustat;
ADJ_ASSET = *ASSET* less *RET_INT* and *SR*;
SPE_ASSET = managed loans off-balance sheet disclosed in the financial statements;
SPE_LIAB = *SPE_ASSET* less *RET_INT* and *SR*;
NI = data item 172 from Compustat;
ADJ_NI = *NI* less gains (losses) from current year securitization activities;
RET_INT = retained interests from securitization transactions; and
SR = servicing rights from securitization activities.

All variables are measured on a per share basis, by deflating by common shares outstanding 3 months after year-end (data item 61).

assets (S-O assets), *SPE_ASSET* (*ASSETS*), are 18 percent and 10 percent (7 percent and 1 percent). In addition, the ratio of *RET_INT* to *SPE_ASSET* exhibits wide cross-sectional variation.

Table 2 indicates that each of the asset and liability measures is highly correlated with each other and with stock price. Interestingly, the bivariate correlation between stock price, *MVE*, and *SPE_ASSET* is negative, although this does not imply that the partial correlation between the two measures is negative.

VI. EMPIRICAL RESULTS

Specifications for Full Sample

Table 3 presents regression summary statistics associated with estimation of Equation (1), the benchmark model before consolidation of the S-O and SPE balance sheets.[21] Consistent with our predictions, the *ASSET* and *NI* coefficients are positive and the *LIAB* coefficient is negative. Furthermore, we cannot reject the null that $a_1 = 1$ and $a_2 = -1$, the respective untabulated t-statistics being 0.49 and −0.85. The model in the Appendix implies that when $a_1 = 1$ and $a_2 = -1$, there are constraints on the amount of accounting bias (i.e., conservatism), and that these regression coefficients imply that these constraints are met.

Table 4 presents regression summary statistics associated with estimation of Equation (2), which permits the coefficients on S-O total assets and liabilities and SPE total assets and liabilities to differ. Findings indicate that the market views SPE assets and liabilities similarly to S-O assets and liabilities. In particular, untabulated t-statistics associated with the test of the asset coefficients being equal to 1 and the liability coefficients being equal to −1 are each insignificant (the

TABLE 3

Base Model Regression

Model: $MVE_{it} = a_0 + a_1ASSET_{it} + a_2LIAB_{it} + a_3NI_{it} + e_{it}$

Intercept	***ASSET***	***LIAB***	***NI***	**Adjusted R^2**	**n**
5.81	0.95	−0.91	2.18	0.5914	282
(4.21)	(9.34)	(−8.63)	(8.06)		

OLS regressions of price on assets, liabilities, and net income. t-statistics are reported in brackets. Observations where Rstudent is larger than 2 in absolute value have been deleted.

Variable Definitions:

ASSET = data item 6 from Compustat;
LIAB = data item 181 from Compustat;
NI = data item 172 from Compustat; and
MVE = price 3 months after the year-end (data item 14) multiplied by common shares outstanding 3 months after year-end (data item 61).

All variables are measured on a per share basis, by deflating by common shares outstanding 3 months after year-end (data item 61).

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[21] Untabulated findings from estimating Equations (1)–(3) in ranks and using year fixed-effects indicate no changes in inferences from those relating to the tabulated findings.

TABLE 4

Sponsor's Assets and Liabilities and SPE's Assets and Liabilities

Model: $MVE_{it} = a_0 + a_1 ADJ\_ASSET_{it} + a_2 ADJ\_LIAB_{it} + a_3 SPE\_ASSET_{it} + a_4 SPE\_LIAB_{it} + a_5 ADJ\_NI_{it} + e_{it}$

Intercept	*ADJ_ASSET*	*LIAB*	*SPE_ASSET*	*SPE_LIAB*	*ADJ_NI*	**Adjusted R^2**	**n**
5.30	0.99	−0.93	1.06	−1.07	0.91	0.5595	283
(3.74)	(9.62)	(−8.75)	(9.67)	(−9.41)	(4.13)		
ADJ_ASSET = SPE_ASSET			1.00				
LIAB = SPE_LIAB			3.02				

OLS regressions of price on sponsors assets, liabilities, net income, and SPE assets and liabilities. t-statistics are reported in brackets. Observations where Rstudent is larger than 2 in absolute value have been deleted.

Variable Definitions:
ASSET = data item 6 from Compustat;
LIAB = data item 181 from Compustat;
ADJ_ASSET = *ASSET* less *RET_INT* and *SR*;
SPE_ASSET = managed loans off-balance sheet disclosed in the financial statements;
SPE_LIAB = *SPE_ASSET* less *RET_INT* and *SR*;
NI = data item 172 from Compustat;
ADJ_NI = *NI* less gains (losses) from current year securitization activities;
RET_INT = retained interests from securitization transactions;
SR = servicing rights from securitization activities; and
MVE = price 3 months after the year-end (data item 14) multiplied by common shares outstanding 3 months after year-end (data item 61).

All variables are measured on a per share basis, by deflating by common shares outstanding 3 months after year-end (data item 61). *ADJ_ASSET = SPE_ASSET* and *LIAB* = *SPE_LIAB* report the results of F-tests of the equality of coefficients.

t-statistics for $a_1 = 1$, $a_2 = -1$, $a_3 = 1$, $a_4 = -1$ are 0.1, −0.66, 0.55, and −0.62, respectively). This finding indicates that SPE asset and liabilities are valued as belonging to the S-O when S-O assets, liabilities, and net income are restated to reflect the effects of consolidation.

These findings also are supported by the F-statistics associated with the test whether the market values S-O and SPE assets and liabilities similarly, i.e., as if $a_3 = a_1$ and $a_4 = a_2$. The F-statistics, 1.00 and 3.02, are respectively insignificant and marginally significant (critical F at 5 percent level is 2.15).[22] Taken together, the findings in Table 4 suggest that when the S-O and SPE are consolidated, the evidence suggests that the market views the typical asset securitization as a loan, not as a sale.

It is also interesting to note that the S-O asset and liability coefficients in Table 4 are nearly identical to those in Table 3. Thus, adding SPE assets and liabilities to the equity valuation equation that already includes S-O assets and liabilities has little impact on the S-O asset and liability coefficients. This finding suggests that although the market views SPE assets and liabilities as belonging to the S-O, it also views the activities of the SPE as being separable from those of the S-O. This is not surprising given that only separable assets can be used as a basis for securitization.

Randomization Tests

Table 5 presents the findings from the bootstrapping procedure in which Equation (2) is re-estimated after scaled SPE assets and liabilities are randomly assigned from one S-O to another. We report the mean coefficients from the 1,000 estimations and the number of times a_3 and a_4, the SPE asset and liability coefficients, differ from zero.

The findings in Table 5 indicate that randomly assigned SPE assets and liabilities are not valued as belonging to the recipient S-O. Even though the Fama-MacBeth t-statistics are significant, the economic magnitudes of the mean coefficients are essentially zero, 0.0001, and −0.0001, respectively, for SPE assets and liabilities. In addition, the number of significant randomly assigned SPE asset and liability coefficients is approximately 14 percent. The key conclusion to be drawn from Table 5 is that randomly assigning SPE assets and liabilities from one S-O to another, adjusting for scale differences between the S-Os, indicates that scale is not a factor that can explain the findings in Table 4. This is additional evidence to support the conclusion that the market views SPE assets and liabilities as belonging to the S-O.

The Impact of Retained Interest

Table 6 presents findings associated with estimation of Equation (3), which allows all the parameters to vary according to whether retained interest is high or low. If the market considers the degree of risk transfer to be different for high and low retained interest S-O firms, then SPE asset and liability coefficients for high retained interest S-O firms will be larger in absolute magnitude than will be those for low retained interest S-O firms. That is, we predict $a_3 + a_9 > a_3$ and $a_4 + a_{10} < a_4$. In the extreme, if risk transfer is complete for low retained interest S-O firms, then their SPE asset and liability coefficients will be zero; in this case, we should observe $a_3 = a_4 = 0$. Likewise, if there is no risk transfer for high retained interest S-O firms, then their S-O and SPE asset and liability coefficients will be similar in magnitude, i.e., $a_3 + a_9 = a_1$ and $a_4 + a_{10} = a_2$.

The findings in Table 6 indicate that the market views high and low retained interest S-O firms similarly. In particular, consistent with the findings in Table 4 in which all S-O firms are treated

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[22] The reason for rejecting $a_4 = a_2$ is that the SPE liability coefficient, −1.07, is even more negative than the S-O liability coefficient, −0.99. This result is consistent with our estimate of the SPE liability understating the true liability.

TABLE 5
Randomization Tests Based on 1,000 Independent Regressions

Model: $MVE_{it} = a_0 + a_1 ADJ\_ASSET_{it} + a_2 ADJ\_LIAB_{it} + a_3 SPE\_ASSET_{it} + a_4 SPE\_LIAB_{it} + a_5 ADJ\_NI_{it} + e_{it}$

	ADJ_ASSET	*LIAB*	*SPE_ASSET*	*SPE_LIAB*	*ADJ_NI*
	0.75	−0.71	0.0001	−0.0001	2.29
	(515.41)	(−463.96)	(6.79)	(−5.72)	(362.48)
No. Significant obs.			142	146	

Summary statistics of OLS regressions of price on assets, liabilities, net income, and random assignment of SPE assets and SPE liabilities. All random assignments of SPE assets and liabilities are scaled by relative magnitudes of "donor" and "recipient" S-O equity market values. Fama Macbeth t-statistics are reported in brackets. No. Significant obs. refers to the number of times the variable was significant (at a p-value of 0.05 or higher) for each individual regression.

Variable Definitions:

MVE = price 3 months after the year-end (data item 14) multiplied by common shares outstanding 3 months after year-end (data item 61);
ASSET = data item 6 from Compustat;
LIAB = data item 181 from Compustat;
ADJ_ASSET = *ASSET* less *RET_INT* and *SR*;
SPE_ASSET = managed loans off-balance sheet randomly assigned;
SPE_LIAB = *SPE_ASSET* less *RET_INT* and *SR* randomly assigned;
NI = data item 172 from Compustat;
ADJ_NI = *NI* less randomly assigned gains (losses) from current year securitization activities;
RET_INT = retained interests from securitization transactions; and
SR = servicing rights from securitization activities.

All variables are measured on a per share basis, by deflating by common shares outstanding 3 months after year-end (data item 61).

TABLE 6

Sponsor's Assets and Liabilities and SPE's Assets and Liabilities Interacted with Retained Interest

Model:

$$MVE_{it} = a_0 + a_1 ADJ\_ASSET_{it} + a_2 LIAB_{it} + a_3 SPE\_ASSET_{it} + a_4 SPE\_LIAB_{it} + a_5 ADJ\_NI_{it} + a_6 HI + a_7 HI * ADJ\_ASSET_{it} + a_8 HI * LIAB_{it} + a_9 HI * SPE\_ASSET_{it} + a_{10} HI * SPE\_LIAB_{it} + a_{11} HI * ADJ\_NI_{it} + e_{it}$$

Intercept	11.97 (5.22)
ADJ_ASSETS	1.00 (7.11)
LIAB	−0.98 (−6.75)
SPE_ASSETS	1.13 (2.73)
SPE_LIAB	−1.14 (−2.62)
ADJ_NI	1.98 (6.25)
HI	−8.42 (−2.85)
HI * ADJ_ASSETS	−0.05 (−0.24)
HI * LIAB	0.10 (0.47)
HI * SPE_ASSETS	−0.36 (−0.81)
HI * SPE_LIAB	0.41 (0.86)
HI * ADJ_NI	−1.44 (−2.90)
F-test of Differences in Coefficients (p-value)	
SPE_ASSETS+HI * SPE_ASSETS	20.63 (<0.0001)
SPE_LIAB + HI * SPE_LIAB	15.47 (<0.0001)
SPE_ASSETS=ADJ_ASSETS	0.11 (0.75)

(continued on next page)

TABLE 6 (continued)

F-test of Differences in Coefficients (p-value)	
SPE_ASSETS+HI * *SPE_ASSETS=ADJ_ASSETS*	1.11 (0.29)
SPE_LIAB = LIAB	0.15 (0.70)
SPE_LIAB + HI * *SPE_ASSETS=LIAB*	1.13 (0.29)
Adjusted R^2	0.5832
n	284

OLS regressions of price on sponsors assets, liabilities, net income, and SPE assets and liabilities. t-statistics are in brackets. Observations where Rstudent is larger than 2 in absolute value have been deleted prior to ranking the data.

Variable Definitions:

ASSET = data item 6 from Compustat;
LIAB = data item 181 from Compustat;
ADJ_ASSET = *ASSET* less *RET_INT* and *SR*;
SPE_ASSET = managed loans off-balance sheet disclosed in the financial statements;
SPE_LIAB = *SPE_ASSET* less *RET_INT* and *SR*;
NI = data item 172 from Compustat;
ADJ_NI = *NI* less gains (losses) from current year securitization activities;
RET_INT = retained interests from securitization transactions;
SR = servicing rights from securitization activities;
MVE = price 3 months after the year-end (data item 14) multiplied by common shares outstanding 3 months after year-end (data item 61); and
HI = an indicator variable set equal to 1 if the observation is ranked above the median of *Retained Interest/SPE_Assets.*

All variables are measured on a per share basis, by deflating by common shares outstanding 3 months after year-end (data item 61).

similarly, when we permit coefficients to depend on the level of retained interest, the results indicate the market views asset securitizations by both high and low retained interest S-O firms as incomplete risk transfers. For low retained interest S-Os, the *SPE_ASSET* and *SPE_LIAB* coefficients are 1.13 and −1.14 (t-statistics = 2.73 and −2.62). For high retained S-Os, the incremental *SPE_ASSET* and *SPE_LIAB* coefficients are −0.36 and 0.41 (t-statistics = −0.81 and 0.86), which indicates that the total *SPE_ASSET* and *SPE_LIAB* coefficients for such firms differ insignificantly from those of low retained interest S-Os. Consistent with these findings, the F-statistics associated with the tests of whether total *SPE_ASSET* and *SPE_LIAB* coefficients differ from zero for high retained interest S-Os are highly significant (20.63 and 15.47, respectively).

Taken at face value, the findings in Table 6 suggest that the market views asset securitizations as secured borrowings by the S-Os regardless of the level of retained interest. The Table 6 and Table 4 findings are consistent with three possible interpretations. First, there is little or no risk transfer in asset securitizations that are accounted for as sales. Second, the market does not have access to credible information necessary to distinguish among securitizations in terms of their degree of risk transfer from the S-O to its SPEs. As a result, a pooling equilibrium obtains, in which the market values all SPE transactions as secured borrowings by the S-Os. Third, the market can make such distinctions but publicly available data are not rich enough to permit us to specify tests that distinguish among S-Os with relatively high and low degrees of risk transfer.[23]

VII. SUMMARY AND CONCLUDING REMARKS

The question this study addresses is whether asset securitizations are really asset sales or a form of secured borrowing. We address this question by estimating cross-sectional equity valuation regressions to assess whether the stock market treats securitized assets and liabilities held by an SPE as assets and liabilities of the S-O. We find that the market views the SPE assets and liabilities as belonging to the S-O, i.e., the risk and rewards of ownership of the transferred assets reside with the S-O and not the SPE. Results from a bootstrapping simulation that controls for scale by randomly assigning SPE assets and liabilities from one S-O to another provide evidence that scale bias is an unlikely explanation for finding the market views SPE assets and liabilities as belonging to the S-O. We also test whether the amount of retained interest arising from asset securitization transactions affects the market's perception of the degree to which risk has been transferred to the SPE. The results indicate the market views asset securitizations by both high and low retained interest S-O firms as incomplete risk transfers.

Sale accounting is endogenous to the risk-structuring process. Using it permits the S-O to solve two problems simultaneously. It enables the SPE bondholders to retain priority in bankruptcy of the S-O while also enabling the S-O to obtain lower borrowing costs by implicitly guaranteeing the SPE's debt. The results from our study provide support for this interpretation for why sale-based asset securitizations are used in lieu of other forms of financing/accounting combinations.

APPENDIX
THE MARKET'S VALUATION OF CORPORATE ASSETS AND LIABILITIES

A starting point for our research design is the benchmark regression given by Equation (1):

$$MVE_{it} = a_0 + a_1 ASSET_{it} + a_2 LIAB_{it} + a_3 NI_{it} + e_{it}. \tag{1'}$$

We consider here what predictions we can make about the coefficients a_1, a_2, and a_3, by reference to a simplified version of the residual income-based valuation (RIV) model developed in Feltham and Ohlson (1995).

The simplifications we make are as follows. First, we disregard the distinction Feltham and Ohlson (hereafter, FO) draw between financial and operating net assets because for the typical sponsor-originator (S-O) firm that engages in securitization transactions, many of its financial assets and liabilities are tied up with originating and servicing activities that are operating in nature. We treat all net assets as operating items, by assuming that all free cash flow is paid out in dividends, with the result that equity book value consists only of operating assets and liabilities. The second simplification we make is to ignore any sources of information other than book value of equity, bv_t, and abnormal earnings, $x_t^a = x_t - (R-1)bv_{t-1}$, where R is (1 plus) the (constant) return required by investors. Defining earnings as the change in book value plus net dividends, d_t, $x_t \equiv bv_t - bv_{t-1} + d_t$, the FO linear information model (LIM) reduces to the following set of two linear recursive equations:[24]

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[23] For example, additional untabulated findings relating to the small subset of S-Os that provide adequate additional data indicate that retained interest varies systematically across S-O firms in a number of ways. In particular, retained interest is lowest for multiple securitizers, and it varies by type of securitized asset, being lowest for mortgages and business receivables and highest for credit card receivables. Unfortunately, these data are not available for enough sample firms to conduct tests based on their inclusion in the regression model.

$$\tilde{x}^a_{t+1} = \omega_{11}x^a_t + \omega_{12}bv_t + \tilde{\varepsilon}_{1t+1}$$

$$b\tilde{v}_{t+1} = \omega_{22}bv_t + \tilde{\varepsilon}_{2t+1}. \tag{A.1}$$

Following FO, we assume the random term for the net assets equation in Equation (A.1) is mean zero ($E_t[\tilde{\varepsilon}_{2t+1}] = 0$) and impose the *a priori* restrictions that $0 \le \omega_{11} < 1$, $\omega_{12} \ge 0$, and $0 \le \omega_{22} < R$. However, to allow our regression Equation (A.1) to have a nonzero intercept, we depart from FO by incorporating a drift term into abnormal earnings equation in (A.1): $E_t[\tilde{\varepsilon}_{1t+1}] = \mu \neq 0$.

With these amendments, the RIV model:

$$P_t = bv_t + \sum_{\tau=1}^{\infty} R^{-\tau}E_t[\tilde{x}^a_{t+\tau}], \tag{A.2}$$

can be re-written as:

$$P_t = \beta_0 + [1 + (R-1)(1-\gamma_t)]\beta_1 x_t + [1 + \beta_2 - (R-1)\beta_1]bv_t, \tag{A.3}$$

where $\beta_0 = \frac{\mu R}{(R-1)(R-\omega_{11})}$, $\beta_1 = \frac{\omega_{11}}{R-\omega_{11}}$, $\beta_2 = \frac{\omega_{12}R}{(R-\omega_{22})(R-\omega_{11})}$, and $\gamma_t = \frac{d_t}{x_t}$ is the proportion of earnings paid out in dividends during t, which is assumed to be bounded in the range $0 \le \gamma_t \le 1$. Equation (A.3) is now in the same structural form as Equation (1), with $bv_t = ASSET_t - LIAB_t$, $a_0 = \beta_0, a_1 = -a_2 = 1 + \beta_2 - (R-1)\beta_1$, and $a_3 = [1 + (R-1)(1-\gamma_t)]\beta_1$.

The first point to note is that a_1 need not necessarily be equal to 1. a_1 is an increasing function of both the degree of autocorrelation of net assets ($\partial a_1 / \partial\omega_{22} > 0$) and the accounting bias ($\partial a_1 / \partial\omega_{12} > 0$). a_1 has no upper bound (because ω_{12} has no upper bound) and is at a minimum when both (a) net assets exhibit zero autocorrelation ($\omega_{22} = 0$) and (b) the marginal effect of abnormal earnings becomes almost permanent ($\omega_{11} \to 1$):[25]

$$0 \le \frac{\omega_{12}}{R-1} < a_1 < \infty. \tag{A.4}$$

Therefore, a_1 can (in principle) take on a wide range of (non-negative) values.[26]

The valuation weight on earnings, a_3, is non-negative, increases with abnormal earnings persistence ($\partial a_3 / \partial\omega_{11} > 0$) and decreases with payout ($\partial a_3 / \partial\gamma_t < 0$):

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[24] Note the model does not distinguish between assets and liabilities, with liabilities being treated simply as negative assets.

[25] The marginal effect of ω_{11} depends on the magnitudes of ω_{12} and ω_{22}: $\partial a_1 / \partial\omega_{11} \ge 0$ if (and only if) $\omega_{12} \ge (R-1) \times (R - \omega_{22})$ and $\partial a_1 / \partial\omega_{11} < 0$ otherwise.

[26] Tighter bounds than are indicated by (A.4) arise with unbiased accounting ($\omega_{12} = 0$):

$$0 < a_1 = \frac{R(1-\omega_{11})}{R-\omega_{11}} \le 1.$$

However, the upper bound of $a_1 = 1$ is reached only when earnings are transitory ($\omega_{11} = 0$) implying that the earnings term disappears ($a_3 = 1$) leaving the market value of equity equal to the book value of net assets: $P_t = bv_t$. This limiting case might be expected for a firm whose balance sheet consists solely of financial assets and liabilities and that has unbiased accounting.

$$0 \leq a_3 < \frac{R}{R-1}. \tag{A.5}$$

In the special case where $a_1 = 1$, then because $\beta_2 = (R-1)\beta_1$, it follows that abnormal earnings persistence is linked to accounting bias (ω_{12}) as follows:

$$\omega_{11} = \left(\frac{R}{(R-1)(R-\omega_{22})}\right)\omega_{12}. \tag{A.6}$$

In other words, when $a_1 = 1$, ω_{11} will be an increasing function of both the degree of accounting bias, ω_{12}, and the persistence of net assets, ω_{22}. Furthermore, because of the *a priori* restrictions that $\omega_{11} < 1$ and $0 \leq \omega_{22} < R$, it follows from Equation (A.6) that when $a_1 = 1$ the accounting bias parameter must have an upper bound:

$$\omega_{12} < R - 1. \tag{A.7}$$

It is apparent from the above analysis that, in the FO framework, assets (liabilities) are predicted to have non-negative (non-positive) weights. Likewise, earnings should have non-negative weights. Stronger predictions depend on the persistence of abnormal earnings, accounting biases, and the persistence of asset and liability amounts.

As a "reality check," we have used the estimated $\hat{a}_0$ and $\hat{a}_3$ regression coefficients obtained for Equation (1) to infer implied values for the abnormal earnings drift and persistence parameters, $\hat{\mu}$ and $\hat{\omega}_{11}$:

$$\hat{\omega}_{11} = \frac{R\hat{a}_3}{1+(R-1)(1-\gamma_t)+\hat{a}_3} \text{ and } \mu = \frac{(R-1)(R-\hat{\omega}_{11})\hat{a}_0}{R}.$$

A similar calculation can be made concerning the accounting bias:

$$\hat{\omega}_{12} = \left[\frac{(R-\omega_{22})(R-\hat{\omega}_{11})}{R}\right]\left[\hat{a}_1 - \frac{R(1-\hat{\omega}_{11})}{R-\hat{\omega}_{11}}\right].$$

Assuming a cost of equity capital of $R - 1 = 12$ percent and dividend payout over the range $0 \leq \gamma \leq 1$, we obtain estimates for the benchmark regression results reported in Table 3 in the region of $\hat{\mu} \cong 0.23$ and $\hat{\omega}_{11} \cong 0.75$. Making the additional assumption that assets and liabilities are expected at grow at 5 percent per annum ($\omega_{22} = 1.05$), we estimate the accounting bias to be about $\hat{\omega}_{12} \cong 0.004$. Bearing in mind that the asset and liability coefficients are statistically indistinguishable from 1 and -1, this $\hat{\omega}_{12}$ estimate meets the constraint in Equation (A.7) that the accounting bias should be non-negative and less than the cost of equity capital. Moreover, this constraint is satisfied for any value of the asset/liability growth rate within the range $0 \leq \omega_{22} < R$ permitted by the model. Overall, the empirical versions of the model appear to be well specified.

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The Effects of Employee Stock Options on Credit Ratings

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ABSTRACT: This paper examines whether outstanding employee stock options (ESOs), which represent the firm's contractual obligation to deliver shares upon ESO exercise, affect firms' credit ratings. I hypothesize that outstanding ESOs play two information roles—(1) suggesting equity infusion, and (2) predicting share repurchases—that help credit-rating agencies evaluate the issuing company's debt service ability. Consistent with these hypothesized roles, results indicate that the present values of expected cash proceeds and tax benefits from ESO exercise have favorable effects on credit ratings. In contrast, the present value of the expected cost of ESO-related share repurchases has an unfavorable effect on credit ratings and this unfavorable effect is more pronounced for firms with a greater tendency to repurchase shares. The after-tax fair value of outstanding ESOs, which summarizes the effects of the above three ESO-related cash flows, is negatively associated with credit ratings. Taken together, these findings are consistent with credit-rating agencies incorporating the information conveyed by outstanding ESOs regarding potential equity infusion and ESO-related repurchases in their credit risk assessments and assigning lower credit ratings to firms with greater values of outstanding ESOs.

Keywords: *employee stock options; SFAS No. 123R; credit ratings.*

Data Availability: *All data are available from public sources.*

JEL Classifications: *G32; M41; M52.*

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I. INTRODUCTION

This study examines whether credit-rating agencies incorporate the cash flow information contained in outstanding employee stock options (ESOs) when assessing the credit risk of the issuing company. ESOs are financial contracts that give employees the right to purchase the company's own shares at a predetermined price and at a date of the employees' choosing. For the S&P 500 as a whole, the size of outstanding ESOs has more than doubled in recent years, increasing from 4.7 percent in 1995 to 9.6 percent of shares outstanding in 2003.[1] As of 2003, the market value of the shares that the average (median) S&P 500 company is obligated to deliver upon the exercise of outstanding ESOs is $ 2.0 (0.8) billion or 3.7 (1.2) times the firm's cash and short-term investments. Despite the growing significance of this obligation, there is scarce empirical research on whether and how this corporate obligation affects the issuing company's creditworthiness.

In this paper, I hypothesize that outstanding ESOs convey two types of cash flow information that help credit-rating agencies evaluate the issuing company's debt service ability: (1) expected cash inflows due to equity infusion; and (2) expected cash outflows due to probable share repurchases. Related to cash inflows, ESOs are financial commitments to create future equity equal to the amount of the option exercise price. Moreover, current tax rules permit companies to deduct from their taxable income the exercise date intrinsic value of nonqualified ESOs.[2] To the extent that credit-rating agencies factor these two sources of potential equity infusion into their credit risk assessments, the present values of the expected proceeds and tax benefits from ESO exercises should have favorable effects on the issuer's credit rating.

However, the existence of ESOs also predicts future cash outflows in the form of share repurchases. This is because firms may satisfy ESO exercises with shares purchased on the open market. Even for firms that choose to issue new shares to satisfy ESO exercises, the additional shares distributed upon exercise increase the probability that firms will later repurchase shares in an attempt to offset the dilution to earnings per share (EPS) or to maintain a target capital structure. In addition, because generally accepted accounting principles (GAAP) require firms to incorporate the effect of potentially dilutive securities such as ESOs in the calculation of diluted EPS, outstanding ESOs affect diluted EPS even prior to ESO exercise. For example, Bens et al. (2003) find that stock repurchases increase when ESOs become more dilutive and when diluted EPS falls below the level required to meet the historical EPS growth target.[3] Because outstanding ESOs predict future share repurchases and therefore a higher debt-to-equity ratio, cash outflows associated with ESO-related repurchases should have an unfavorable effect on the issuer's credit quality.

Relying on a sample of 990 firm-year observations representing 307 S&P 500 industrial firms and 49 non-S&P 500 firms that are heavy ESO users for the years 2001–2003, I find that the present values of expected cash proceeds and tax benefits from ESO exercise have favorable effects on credit ratings. In contrast, the present value of the expected cost of ESO-related share repurchases has an unfavorable effect on credit ratings and this unfavorable effect is more pronounced for firms with a greater tendency to repurchase shares, consistent with the intuition that ESOs signal an increase in the probability of cash outflow for future share repurchases. Moreover, the after-tax fair value of outstanding ESOs, which measures the expected net cash outflows for firms that repurchase the underlying stock around ESO exercise, is negatively associated with credit ratings.[4] These results hold after controlling for operating risk, stock return performance, cash on hand, and other known factors that affect corporate credit ratings. Results are also robust to the use of the simultaneous equations estimation to control for the endogenous choices of option use and share repurchases and are unaffected by the inclusion of the sensitivity of CEO wealth to stock price (i.e., delta incentives) and the sensitivity of CEO wealth to stock volatility (i.e., vega incentives). As further evidence on the direction of causality, I show that the change in the after-tax fair value of outstanding ESOs helps to predict the one-year-ahead change in credit ratings but the change in credit ratings does not predict the one-year-ahead change in the after-tax fair value of outstanding ESOs, suggesting that the causality runs from ESOs toward credit ratings.

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[1] Based on R.G. Associates' ESO database.

[2] The intrinsic value of an ESO is the excess of the underlying stock price over the option exercise price. For federal income tax purposes, ESOs are classified as incentive stock options (ISOs) or nonqualified stock options (NQOs). Firms receive no tax deduction with ISOs. Because companies do not disclose how outstanding ESOs are classified for tax purposes and Hall and Liebman (2000) report that 95 percent of all ESOs are nonqualified, the empirical analyses of this study assume that all outstanding ESOs are NQOs.

[3] Guay (2002) and Bens et al. (2003) demonstrate that share buybacks can either increase or decrease EPS depending upon the firm's earnings-to-price ratio and alternative investment opportunities. Therefore, repurchasing shares in response to ESO exercises or EPS dilution does not necessarily increase EPS. Empirical evidence thus far (Graham and Harvey 2001; Kahle 2002; Bens et al. 2003; Brav et al. 2005), however, suggests that managers behave as if they believe there is a mechanical increase in EPS after share repurchases. For example, Brav et al. (2005) report that "a notable portion of executives express the view that repurchasing shares reduces the total number of shares and therefore automatically increases EPS."

One might ask why firms engage in ESO-related repurchases if it hurts their credit ratings. Managers trade off the benefits of less EPS dilution (and of more debt) against the costs of lower credit quality. The amount of debt that maximizes equity value is the amount that maximizes the present value of tax shields and incentives less the present value of distress costs, agency costs, and other costs. In general, the amount of debt that maximizes firm value is almost certainly greater than the amount of debt that maximizes credit quality. Without knowing how managers determine their firms' target debt levels, it is not possible to know in general whether EPS-motivated repurchases raise or lower firm value. However, for firms that are under-levered, these repurchases increase firm value by moving the firm closer to an optimal debt level. It is beyond the scope of this paper to determine whether firms are at or below their optimal debt level (see Graham 2000 for evidence that suggests that many firms are below optimal) or to answer the potentially related question of why managers follow the repurchase-to-undo-ESO-exercise strategy.

This study contributes to the literature along several dimensions. First, prior literature on the information role of ESOs indicates that although managers have incentives to manipulate Black-Scholes assumptions in order to underreport pro forma ESO expense (Hodder et al. 2006), ESO disclosures provided under SFAS No. 123 (FASB 1995) convey relevant information that is incorporated in equity investors' valuation decisions (Aboody 1996; Aboody et al. 2004; Bell et al. 2002; Li 2002). The current paper extends this literature by identifying the nature of the cash flow information conveyed by outstanding ESOs and demonstrating that such information is relevant to credit risk assessments. Second, this study is related to the literature linking corporate share repurchases to ESO programs. This literature demonstrates that firms repurchase shares to fund ESO exercise (Kahle 2002) and to manage the effects of ESO exercise on the capital structure (Dittmar 2000) and EPS (Bens et al. 2002). The results of this study suggest that such share repurchase strategies have an explicit cost in the form of lower credit ratings. Third, this study contributes to the literature on the relation between option-based compensation and credit risk. Daniel et al. (2004) show that the CEO's delta and vega incentives are positively associated with bond credit spreads, implying that ESOs affect credit risk *indirectly* through the risk-taking incentives embedded in executive option-based compensation. I show that outstanding ESOs have a direct cash flow implication for credit risk through ESO-motivated share repurchases in addition to their indirect implication through the CEO's ESO incentives.

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[4] The after-tax fair value of outstanding ESOs is calculated as the fair value of ESOs multiplied by one minus the firm's marginal tax rate. Although the actual repurchase does not necessarily coincide with ESO exercise, the stock price at exercise date serves as a reasonable proxy for the amount of cash that the issuing company needs to spend to reacquire shares (Fitch Ratings 2004). Because an ESO will only be exercised when it is in the money, settling the ESO obligation and buying back the underlying stock will result in a net cash outflow equal to the intrinsic value of the ESO on the exercise date.

Presumably, substituting ESOs for cash compensation conserves cash and increases liquidity. However, because the *ceteris paribus* analyses in this study hold all other determinants of credit ratings such as the cash balance, firm size, and financial leverage constant, the analyses essentially compare the creditworthiness of two firms with similar financial positions except that one has some outstanding ESOs while the other does not. The one with outstanding ESOs has more incentives to engage in future share repurchases than the one without because, other things being equal, the former has more dilutive securities and will have more equity in its capital structure if ESOs are exercised. The higher probability of future share repurchases suggests that the firm with outstanding ESOs is more likely to take cash out of operations or increase borrowings outright to fund share repurchase programs, which increases the probability of financial distress and results in a poorer credit profile. These *ceteris paribus* analyses do not speak to how cash conserved by issuing ESOs affect the firm's credit quality. Therefore, the results of this study should not be interpreted as implying that compensating employees with ESOs in lieu of cash impairs creditworthiness.

The rest of the paper proceeds as follows. Section II develops the hypotheses and Section III discusses the empirical research design. I describe the sample selection and descriptive statistics in Section IV. Section V presents empirical findings and Section VI provides supplemental analyses. Section VII concludes.

II. HYPOTHESIS DEVELOPMENT

The issuance of ESOs can be thought of as two simultaneously determined transactions. In the first, an operating transaction, the firm decides the desired level of compensation and incurs compensation expense as well as the corresponding compensation liability. In the second, a financing transaction, the firm funds the compensation liability by issuing stock options rather than paying cash.[5] Thus, the issuance of ESOs is simply a means of financing the compensation transaction by selling future equity to employees. The issuing firm collects the first installment of the transaction price (i.e., the option premium) in the form of employee service. If employees decide to pay the second installment of the transaction price in cash (i.e., option exercise price), then new shares are issued.

At first glance, the first installment of the transaction price, equal to the grant date fair value of ESOs, should have a favorable effect on credit ratings because it reflects the cash conserved as a result of compensating employees with ESOs rather than cash. However, since the amount of cash saved by using ESOs is also reflected in the higher cash balance and operating cash flows, the grant date fair value of outstanding ESOs may not contain information about the conserved cash incremental to the liquidity measures commonly considered by credit-rating agencies.[6] The existence of ESOs, however, does suggest a future equity infusion equal to the ESO exercise price. Moreover, the Internal Revenue Code allows firms to receive a tax deduction equal to the exercise date intrinsic value of nonqualified ESOs, which provides an additional source of equity infusion when ESOs are exercised. *Ex ante*, it is unclear whether credit analysts, who generally take a more conservative approach to evaluating a firm's upside potential than downside risk, will factor these two sources of future equity into their credit risk assessments. This is because the realization of these cash inflows depends on the uncertain event that ESOs will finish in the money. If credit-rating agencies consider these future equity infusions, then the present values of expected proceeds and tax benefits from the exercise of outstanding ESOs should have a favorable effect on the firm's credit rating. Thus, I pose the following hypothesis, stated in alternative form:

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[5] The amount of compensation is not independent of the form of compensation. Hall and Murphy (2002) analytically demonstrate that, under the assumptions that employees are risk averse and unable to perfectly undo the risks imposed by ESO grants, options are worth less to employees than their economic cost to the issuing company. The authors provide supporting evidence that for firms conducting explicit exchanges of cash for stock-based compensation, participating executives typically receive a "risk premium" for accepting stock-based pay rather than cash pay, with the risk premium of ESOs being nearly twice that of restricted stock. Thus, whether ESOs are an efficient form of compensation depends on whether the incentive effects that tie the manager's wealth to changes in shareholder value create enough value to offset the additional compensation cost (i.e., risk premium).

[6] To the extent that ESOs help conserve scarce cash and allow companies to finance profitable projects, supplemental ESO disclosures could still provide useful insights into the source of financing and liquidity strength.

> **H1:** (Equity Infusion Hypothesis) *Ceteris paribus*, the present values of expected cash proceeds and expected tax benefits from the exercise of outstanding ESOs are positively associated with the issuing firm's credit rating.

Unlike common equity, outstanding ESOs do not have an unequivocal credit-enhancing effect on the issuing firm's financial health because firms are obligated to deliver shares upon ESO exercise. Firms typically have two ways to satisfy ESO exercises. They can either distribute pre-existing shares acquired from the open market or issue new shares directly to employees. For firms that repurchase shares, the settlement of ESO obligations involves a cash outflow, which reduces net assets available to service debt and thereby decreases the likelihood that creditors can fully recover their investments in the case of bankruptcy. For firms that choose to issue new shares, the settlement of ESO obligations could still have cash flow implications. Graham and Harvey's (2001) survey evidence suggests that firms typically have a target capital structure and that managers are concerned about EPS dilution when issuing equity. Dittmar (2000) finds that firms tend to repurchase stock when the leverage ratio is lower than their target leverage ratio. Given that the new equity created on ESO exercise reduces the leverage and reported EPS, the evidence in these studies suggests that ESO exercise increases the likelihood that firms will buy back shares to undo any undesired capital structure and earnings consequences.

Empirical and survey evidence suggests that ESO exercise is an important determinant of corporate repurchase policies. For example, Brav et al. (2005) survey 384 financial executives and find that most executives target the number of shares needed for ESO exercise when making repurchase decisions. Weisbenner (2000) and Kahle (2002) find that outstanding ESOs as well as the number of exercisable and exercised ESOs are strong predictors of the dollar amount spent on share repurchases. Bens et al. (2002) show that firms divert cash from R&D and capital expenditures to fund share repurchase programs in order to mitigate EPS dilution from large ESO exercise. In addition, outstanding ESOs affect diluted EPS even prior to the exercise date. SFAS No. 128 mandates the presentation of both basic and diluted EPS on income statements and requires the use of the treasury stock method to account for the effect of dilutive securities such as ESOs when calculating diluted EPS.[7] Consistent with firms managing the effect of ESO programs on diluted EPS, Bens et al. (2003) document that S&P 500 companies increase repurchase intensity when ESOs' impact on EPS is more dilutive.

Credit-rating agencies also voice their concern regarding ESO-motivated share repurchases. For example, Standard & Poor's states that:

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[7] Under the treasury stock method, the number of dilutive shares attributed to outstanding ESOs is the larger of zero or the number of common shares underlying outstanding ESOs minus the number of common shares that can be purchased with the proceeds from ESO exercise.

> It would be a mistake to focus narrowly on the stock option process without considering collateral actions that may accompany it. Most companies are sufficiently concerned about shareholder dilution to offset option exercise with share repurchases. Some will purchase the shares contemporaneously with the exercise or shortly thereafter; others arrange the share buy-in in advance—and honor the option exercise with shares held in treasury. The net effect: instead of bolstering their balance sheet, the company has spent cash (by taking on more debt or reducing accumulated cash) to the tune of the difference between the strike price of options and the market price of the shares ... The mere fact that a company has the discretion not to buy is no reason to overlook the expected likely outcome. (Standard & Poor's 2002)[8]

Issuing ESOs to employees and then buying back the underlying shares only delays the cash payout to employees. This suggests that for firms that maintain ongoing ESO-motivated repurchase programs, outstanding ESOs represent a form of deferred compensation that will ultimately be paid in cash (Fitch Ratings 2004). Ideally, creditors would only view outstanding ESOs as credit harming when the issuing firm actually conducts ESO-related repurchases. However, creditors do not have perfect foresight as to whether such repurchases will take place in the future. Given the uncertainty regarding future repurchases and creditors' tendency to focus more on the lower end of cash flows, rating agencies may view outstanding ESOs as a form of contingent liability, which could trigger a call on future cash flows and impair the firm's credit profile.[9] The adverse impact of outstanding ESOs on credit ratings should be more pronounced for firms with a greater tendency to repurchase shares in the future. The above discussion leads to the following hypotheses, stated in alternative form:

H2: (Predicting Repurchase Hypothesis) *Ceteris paribus*, the present value of the expected cost of ESO-related repurchases is negatively associated with the issuing company's credit rating.

H3: (Predicting Repurchase Hypothesis) *Ceteris paribus*, the expected cost of ESO-related repurchases has a more adverse impact on credit ratings when the issuing company exhibits a greater tendency to repurchase shares in the future.

III. RESEARCH DESIGN

I estimate the following ordered probit model to assess the impacts of outstanding ESOs on credit ratings.

$$\begin{aligned} RATING_{i,t} = {} & \alpha_1 PROCEEDS_{i,t} + \alpha_2 TAX_{i,t} + \alpha_3\, OUTFLOW_{i,t} + \alpha_4 REPUR_{i,t} + \alpha_5 REPUR_i \\ & \times OUTFLOW_{i,t} + \alpha_6 STDROA_{i,t} + \alpha_7 RET_{i,t} + \alpha_{11} CASH_{i,t} + \alpha_{12} FOCF_{i,t} \\ & + \alpha_{13} LEVERAGE_{i,t,} + \alpha_{14} ROA_{i,t} + \alpha_{15} LOSS_{i,t} + \alpha_{16} INT\_COV_{i,t} + \alpha_{17} SIZE_{i,t} \\ & + \alpha_{18} SUBORD_{i,t} + \alpha_{19} CAP\_INTEN + \varphi_K IndustryDummies_k + \varepsilon_{i,t} \end{aligned} \tag{1}$$

where *i*, *t*, *k* are firm, year, and industry indexes, respectively.

RATING is the long-term issuer credit rating assigned by Standard & Poor's six months after the fiscal year ends.[10] Following Ashbaugh-Skaife et al. (2006), I recode the credit rating data

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[8] See Moody's Investor Services (2002) and Fitch Ratings (2004) for similar comments.

[9] Creditors care more about the firm's downside risk than upside potential because when the firm's cash flows are sufficient to cover the loan, creditors only receive promised interest and principal payments and do not participate in further firm success. However, when the firm is unable to generate sufficient cash flow to cover the loan, creditors lose the entire contracted amount.

[10] I allow a six-month lag to ensure that rating agencies have sufficient time to incorporate ESO information disclosed in 10-K filings in their credit rating decisions. My results are not sensitive to the use of a three-month lag.

(Compustat Quarterly data *SPDRC*) to remove unassigned codes and collapse the ratings into seven categories, with a higher value of *RATING* indicating a better credit rating.[11]

PROCEEDS is the expected cash proceeds from the exercise of outstanding ESOs, scaled by total assets. The expected proceeds from exercising outstanding ESOs are calculated as the present value of the weighted average exercise price per option weighted by the probability that the options will finish in the money and multiplied by the total number of ESOs outstanding. Because the probability that a call option will finish in the money is captured by the cumulative probability distribution $N(d_2)$ in the Black-Scholes formula, the present value of the expected ESO exercise proceeds is essentially the second term of the Black-Scholes formula, $Xe^{-rt}N(d_2)$, multiplied by the number of outstanding ESOs, where X is the exercise price of the ESO and e^{-rt} is the present value factor.[12] Consistent with the equity infusion hypothesis, I expect α_1 to be positive.

TAX is the expected tax benefits from ESO exercise scaled by total assets. The expected tax benefits from ESO exercise is estimated as the probability-weighted present value of the exercise date intrinsic value of outstanding ESOs, as measured by their Black-Scholes value, multiplied by the firm's marginal tax rate taken from John Graham's marginal tax rate database. Consistent with the equity infusion hypothesis, the coefficient on *TAX* is expected to be positive.

OUTFLOW is the present value of the expected cash that the firm has to spend in order to buy back enough shares to fulfill/undo ESO exercise.[13] I use the exercise date market price of the underlying stock to proxy for the cost of share repurchases and measure *OUTFLOW* as the number of outstanding ESOs multiplied by the first term of the Black-Scholes formula and scaled by total assets. At any point in time, the first term of the Black-Scholes formula measures the probability-weighted present value of the underlying stock to be delivered on exercise.[14] Consistent with the predicting repurchase hypothesis, I expect the coefficient on *OUTFLOW* to be negative.

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[11] An issuer credit rating is credit-rating agencies' opinion of the company's overall capacity to meet its financial commitments and is not specific to any particular financial obligation. The rating process typically starts when a company requests a credit rating from the rating agency. The rating agency then meets with management to review the company's key operating and financial plans as well as other credit factors that have an impact on the rating. Once a credit rating is published, credit analysts review new financial and economic developments on an ongoing basis to determine whether a rating change is needed.

[12] The Black-Scholes formula as modified by Merton (1973) is: $C = Se^{-dt}N(d_1) - Xe^{-rt}N(d_2)$, where $d_1 = [\ln(S/X) + (r - d + 0.5\sigma^2) * t] / [\sigma \sqrt{t}]$ and $d_2 = d_1 - \sigma \sqrt{t}$, where S is the stock price on the valuation date; X is the exercise price of the option; r is the risk-free interest rate; d is the expected annual dividend yield; σ is the expected annual stock price volatility; t is the expected life of the option in years. $N(.)$ is the cumulative normal distribution function.

[13] Although managers might buy back shares prior to ESO exercise to manage diluted EPS, it is difficult, if not impossible, for credit analysts to predict the timing and cost of share repurchases used to manage diluted EPS because *ex ante*, credit analysts do not have perfect knowledge about the company's future earnings and stock price performance. Weisbenner (2000) reports that only 38 percent of shares underlying an option grant are repurchased prior to the exercise year. Thus, the empirical analyses of this study focus on share repurchases to satisfy or undo ESO exercise. My results are unaffected by including the amount of cash that the company needs to spend on share repurchases in order to completely eliminate the dilutive effect of outstanding ESOs under the treasury stock method.

[14] The Black-Scholes formula approximates the fair value of a call option from the perspective of a trader who wishes to hedge his short position in an option using a self-financing replicating hedging strategy. In liquid markets, one can hedge the risk of the short exposure in the call option by having offsetting investments in the underlying stock and using borrowed money to finance the long position in the stock. At expiration, the hedging portfolio should contain exactly the number of shares required by the option holder. The amount of cash collected from option exercise should be exactly enough to pay off the outstanding debt used to finance the underlying stock. Thus, at every point of time, the second (first) term of the Black-Scholes formula is the probability-weighted present value of option exercise price (the underlying stock to be delivered upon exercise).

For firms that repurchase in response to ESO exercise, the cost of reacquiring shares is necessarily greater than the exercise proceeds, resulting in a net cash outflow equal to the exercise-date intrinsic value of the ESO because an ESO is exercised only when the market price of the underlying stock exceeds its exercise price. The fair value of a call option, which is the present value of the probability-weighted exercise-date intrinsic value, can therefore be used to approximate the present value of the expected *net* cash outflow at the settlement of the ESO contract when the firm repurchases shares to satisfy or undo ESO exercise. The expected net cash outflow *after* tax benefits can be proxied by the fair value of the ESO multiplied by one minus the firm's marginal tax rate (hereafter, the after-tax fair value of ESOs).[15] I assess ESOs' overall cash flow impact on credit risk by re-estimating the credit-rating model replacing *PROCEEDS*, *TAX*, and *OUTFLOW* with *OPTIONVALUE*, defined as the after-tax fair value of outstanding ESOs scaled by total assets. The coefficient on *OPTIONVALUE* is expected to be negative.

The fair value of outstanding ESOs is computed as the fair value per option multiplied by the number of ESOs outstanding at the end of the fiscal year, where the fair value per option is calculated based on the Black and Scholes (1973) option-pricing model, as modified by Merton (1973) to account for dividend payments. I use the following four model assumptions: (1) volatility, estimated per SFAS No. 123R (FASB 2004) as the standard deviation of the natural logarithm of monthly CRSP price relatives (P_n / P_{n-1}) times the square root of 12 over the past 60 months; (2) risk-free interest rate, measured as the yield on U.S. Treasury securities with a remaining time to maturity similar to the expected life obtained in assumption (4); (3) dividend yields, which are those used by ExecuComp to estimate the fair value of executive ESO grants (ExecuComp data *BS_YIELD*); and (4) expected life of outstanding ESOs, computed following Li (2002) as the expected life of newly granted ESOs minus the number of years that these ESOs have been outstanding, where the number of years that ESOs have been outstanding is calculated as the maximum contractual life of outstanding ESOs minus their remaining contractual life, both of which are disclosed in the SFAS No. 123 footnote.[16] Following Core and Guay (2002), I value a firm's outstanding ESOs as if they were a single option grant and use the disclosed weighted average exercise price for outstanding ESOs, the fiscal year-end stock price, and the above four model assumptions as model inputs.

I use the firm's past repurchase intensity, *REPUR*, to proxy for its tendency to repurchase in the future. *REPUR* is calculated as the three-year average of [(purchase of common and preferred stock for year *t* (Compustat #115)−decrease in preferred stock (Compustat #130) from year *t*−1 to year *t*)/total assets].[17] I do not make a prediction about the sign of *REPUR* since, on the one hand, repurchasing firms are likely to have more internally generated cash or better access to external financing, suggesting higher credit quality. On the other hand, share repurchases are conceptually equivalent to returning corporate profits to shareholders, which reduces the cash and other assets available to service debt. Thus, it is an empirical question whether *REPUR* has a favorable or unfavorable impact on credit ratings. Nevertheless, I expect a negative coefficient on *REPUR* × *OUTFLOW*, consistent with H3.

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[15] To see this, suppose that the expected cash outflow is $E(P)$ and expected exercise proceeds are $E(X)$, where P is the exercise day stock price and X is the option exercise price. The expected tax benefit is $[E(P) - E(X)]^{*}t$ and the expected net cash outflow after the tax benefit is $[E(P) - E(X)]^{*}\ (1 - t)]$, where t is the company's marginal tax rate. I thank the editor for providing this insight.

[16] Suppose the expected life of newly issued ESOs is 5 years and the maximum contractual life and remaining contractual life for outstanding ESOs are 10 and 7 years, respectively. I compute the number of years that unexercised ESOs have been outstanding as the maximum contractual life of outstanding ESOs (10 years) minus their remaining contractual life (7 years), or 3 years in this case. Because firms do not provide detailed information about outstanding ESOs' original expected life, I assume that outstanding ESOs have the same original expected life as newly issued ESOs. Thus, the remaining expected life of outstanding ESOs is 2 years in my example, calculated as the expected life for newly issued ESOs (5 years) minus the number of years that unexercised ESOs have been outstanding (3 years). If the expected life for newly issued ESOs is less than the number of years that unexercised ESOs have been outstanding, I assume that expected life for outstanding ESOs is one month. Assuming a six-month of expected life yields inferentially similar results.

To control for the alternative explanation that the negative correlation between outstanding ESOs and the firm's credit rating reflects credit-rating agencies' aversion to the greater operating risk induced by option-based compensation, I include the standard deviation of income before extraordinary items deflated by total assets (*STDROA*), calculated over the past five years to capture the firm's operating risk.[18] The coefficient on *STDROA* is expected to be negative. The predicting repurchase hypothesis argues that credit-rating agencies are concerned about the potential cash outflows associated with ESO-motivated repurchases. These cash outflows, however, occur only when ESOs are exercised or become more dilutive, both implying that the underlying stock appreciates in value. Thus, I include the contemporaneous stock return (*RET*) in the credit-rating model to control for the effect of stock price performance on credit ratings. Although a strong price performance reflects equity investors' optimism about future firm prospects, shareholders' interests are not always aligned with those of creditors.[19] As a result, I do not make a formal prediction about the sign of *RET*.

Because credit-rating agencies emphasize that debt is serviced out of cash rather than earnings (S&P corporate rating criteria), I include two cash-related variables to control for cash availability. The first variable is free operating cash flow, *FOCF*, measured following Coles et al. (2006) as operating cash flows (Compustat #308) minus depreciation and amortization (Compustat #125) plus R&D expenditures (Compustat #46) scaled by total assets. The coefficient on *FOCF* is expected to be positive. The second cash-related variable is cash on hand, *CASH*, measured as the ending balance of cash and short-term investments (Compustat #1) scaled by total assets. Firms holding larger amounts of the most liquid assets should be better able to make periodical interest and principal payments when facing external economic shocks, suggesting a better credit profile. However, Opler et al. (1999) find that smaller firms, firms with strong growth opportunities, and firms with riskier activities are likely to hold more cash, implying that corporate cash holdings reflect the firm's risk profile and difficulty in accessing external capital markets. Thus, the sign of *CASH* is an empirical question.

Finally, I include in the *RATING* model the firm characteristics identified by Ashbaugh-Skaife et al. (2006) as being associated with corporate credit ratings, including book leverage (*LEVERAGE*), profitability (*ROA*), a dummy variable indicating whether the firm suffering from a loss (*LOSS*), interest coverage ratio (*INT_COV*), firm size (*SIZE*), a dummy variable indicating

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[17] Stephens and Weisbach (1998) note that Compustat #115 includes treasury stock purchases, conversions of preferred stock into common stock, conversions of class A, B, and special stock into common stock, and retirement and redemption of both common stock and preferred stock. Since I am interested only in the dollar amount spent on repurchasing common stock, adjusting for the decrease in preferred stock removes some noise contained in Compustat #115 (Dittmar 2000).

[18] As a sensitivity test, I also include the standard deviation of operating cash flows, standard deviation of stock returns, both calculated over the past five years, and R&D expenditures as additional proxies for the operating risk. My results are robust to the inclusion of these variables.

[19] Goh and Ederington (1993) show that bond rating downgrades caused by a move to transfer wealth from bondholders to stockholders (e.g., an increase in leverage) do not trigger a negative stock market reaction. In addition, Bhojraj and Sengupta (2003) document a negative association between contemporaneous stock returns and credit ratings.

TABLE 1
Sample Selection

Panel A: Credit Rating Sample from 2001 to 2003

	No. of Firms-Years	No. of Firms[a]
All S&P500 firms in R.G. Associates' stock option database	1,491	497
Less: firms not listed in Compustat	(3)	(1)
Add: non-S&P 500 firms that are potential heavy option users	417	139
Less: utilities and financial services firms	(414)	(138)
Initial credit ratings sample	1,491	497
Less: firm-years without credit ratings on Compustat	(411)	(147)
Less: firm-years without necessary Compustat, CRSP and ExecuComp data for the credit-rating model	(90)	(59)
Number of firm-years used in the credit ratings analyses	990	356

Panel B: Descriptive Statistics on Sample Firms (990 firm-year observations)

Variable[b]	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.	n
Total assets ($MM)	15,636	28,930	2,819	6,801	15,496	990
Market value of equity ($MM)	18,647	37,677	3,053	6,658	14,810	990
Total market capitalization ($MM)	24,354	45,641	4,314	9,354	20,445	990
ROA	0.035	0.089	0.012	0.046	0.080	990
Book-to-market ratio	0.609	0.244	0.420	0.600	0.788	990
Leverage	0.279	0.146	0.180	0.270	0.362	990
# of ESOs Granted during the year/outstanding shares	0.023	0.019	0.011	0.019	0.029	987
# of ESOs Outstanding at the end of the year/outstanding shares	0.102	0.054	0.066	0.091	0.128	990
Fair value of outstanding ESOs ($MM)	412	781	64	158	399	990

(continued on next page)

TABLE 1 (continued)

Variable[b]	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.	n
Fair value of outstanding ESOs/cash and short-term investments	1.325	2.577	0.160	0.422	1.160	990
Fair value of outstanding ESOs/total debt	0.412	1.122	0.030	0.096	0.274	979
Value of common shares repurchased ($MM)	494	1,023	31	121	398	551
Value of common shares repurchased/operating cash flows[c]	0.297	0.369	0.053	0.199	0.425	540

Panel C: Industry Median Values of Selected Sample Firm Characteristics[d]

	Mining and Construction	Food	Textile, Printing and Publishing	Chemicals	Pharmaceuticals	Extractive Industries	Durable Manufacturers	Computers	Transportation	Retail	Services
# of firm-years in the industry	27	56	81	58	55	60	267	133	66	123	64
% of total sample firm-years	2.73	5.66	8.18	5.86	5.56	6.06	26.97	13.43	6.67	12.42	6.46
Total assets ($MM)	3,787	10,255	4,188	5,571	6,443	13,090	4,802	5,647	25,244	6,676	4,965
Market value of equity ($MM)	3,255	9,834	4,677	7,408	12,755	7,785	4,886	6,685	15,973	7,182	4,758
Total market capitalization ($MM)	2,999	7,218	3,314	3,485	7,836	9,684	3,442	4,417	16,932	4,740	3,025
ROA	0.048	0.071	0.059	0.056	0.073	0.049	0.036	0.016	0.025	0.058	0.044
Book-to-market ratio	0.698	0.508	0.602	0.561	0.338	0.734	0.619	0.542	0.758	0.563	0.613

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TABLE 1 (continued)

	Mining and Construction	Food	Textile, Printing and Publishing	Chemicals	Pharmaceuticals	Extractive Industries	Durable Manufacturers	Computers	Transportation	Retail	Services
Leverage	0.285	0.363	0.300	0.301	0.201	0.282	0.260	0.178	0.306	0.270	0.314
Number of ESOs Granted during the year/outstanding shares	0.012	0.014	0.017	0.016	0.017	0.007	0.019	0.032	0.014	0.019	0.023
Number of ESOs Outstanding at the end of the year/outstanding shares	0.086	0.085	0.080	0.089	0.083	0.052	0.096	0.131	0.081	0.090	0.102
Fair value of outstanding ESOs ($MM)	104	170	124	140	456	129	123	290	244	203	140
Fair value of outstanding ESOs/cash and short-term investments	0.459	0.978	0.752	0.620	0.358	0.383	0.357	0.317	0.422	0.455	1.160
Fair value of outstanding ESOs/total debt	0.096	0.070	0.070	0.090	0.309	0.031	0.080	0.334	0.027	0.130	0.112

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TABLE 1 (continued)

	Mining and Construction	Food	Textile, Printing and Publishing	Chemicals	Pharmaceuticals	Extractive Industries	Durable Manufacturers	Computers	Transportation	Retail	Services
Common share repurchase ($MM)	28	170	132	120	181	102	63	191	376	157	143
Value of common share repurchased/operating cash flows	0.087	0.141	0.182	0.215	0.396	0.100	0.134	0.278	0.100	0.171	0.343

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[a] Note that the adjustments in the "No. of Firms" column do not add up to the number of firms in the final sample. This is because when firms have missing data in any of the three sample years, they will show up as adjustments. However, as long as firms have at least one firm-year remaining in the final sample, they will not be excluded from the number of firms in the credit rating sample.

[b] All variables are winsorized at the 1% and 99% levels.

[c] Eleven firms with negative operating cash flows are excluded from this calculation.

[d] The industry membership is assigned based on the following classification: Mining and construction (SIC 1000–1999 except 1300–1399), Food (SIC 2000–2111), Textile, printing and publishing (SIC 2200–2799), Chemicals (SIC 2800–2824 and 2840–2899), Pharmaceuticals (SIC 2830–2836), Extractive industries (SIC 2900–2999 and 1300–1399), Durable manufacturers (SIC 9997 and 3000–3999 except 3570–3579 and 3670–3679), Computers (SIC 7370–7379, 3570–379, and 3670–3679), Transportation (SIC 4000–4899), Retail (SIC 5000–5999), and Services (SIC 7000–8999, except 7370–7379).

Variables: Total assets are Compustat #6. Market value of equity is the stock price at the end of the year (Compustat #199) multiplied by the number of shares outstanding at the end of the year (Compustat #25). Total market capitalization is the sum of the market value of equity, book value of debt (Compustat #9 + Compustat #34), the fair value of outstanding ESOs, preferred stock (Compustat #130) and minority interest (Compustat #38). ROA is income before extraordinary items (Compustat #18) divided by total assets (Compustat #6). Book-to-market ratio (*B2M*) is calculated as the book value of assets (Compustat #6) divided by the market value of assets, where the market value of assets is the sum of book value of liabilities and market value of equity (Compustat #181 + Compustat #25 × Compustat #199). Leverage is total debt (Compustat #9 + Compustat #34) divided by total assets. The fair value of outstanding ESOs is the fair value per option multiplied by the number of outstanding ESOs at the end of the fiscal year. The fair value per option is calculated based on the Black and Scholes (1973) option valuation model, as modified by Merton (1973) to account for dividend payments, along with the following estimated model assumptions: (1) volatility, estimated per SFAS No. 123R as the standard deviation of the natural logarithm of monthly CRSP price relatives (P_n / P_{n-1}) times the square root of 12 over the past 60 months; (2) expected life of outstanding ESOs, computed following Li (2002) as the original expected life of outstanding ESOs when they were first issued minus the number of years that ESOs have been outstanding, where the number of years that ESOs have been outstanding is calculated as their maximum contractual life minus the remaining contractual

(continued on next page)

TABLE 1 (continued)

life, both of which are disclosed in the SFAS No. 123 footnote. Since firms do not provide information about the original expected life for outstanding ESOs, I assume that outstanding ESOs have the same original expected life as newly issued ESOs; (3) risk-free interest rate, measured as the yield on U.S. Treasury securities with a remaining time to maturity similar to the expected life obtained in assumption (2) above; and (4) dividend yields, which are those used by ExecuComp to estimate the fair value of executive ESOgrants (ExecuComp data *BS_YIELD*). Following Core and Guay (2002) and Li (2002), I value a firm's outstanding ESOs as if they were a single option grant using the disclosed weighted average exercise price for outstanding ESOs, the fiscal year-end stock price, and the above four model assumptions as model inputs. The Black-Scholes-Merton formula is as follows:

$$C = Se^{-dt}N(d_1) - Xe^{-rt}N(d_2)$$

where $d_1 = [\ln(S/X) + (r - d + 0.5\sigma^2) \times t] / [\sigma \sqrt{t}]$ and $d_2 = d_1 - \sigma \sqrt{t}$, where S is stock price on the valuation date, X is exercise price of the option, r is the risk-free interest rate, d is the expected annual dividend yield, σ is the expected annual stock price volatility, and t is the expected life of the option in years. $N(.)$ is the cumulative normal distribution function. ESOs granted during the year and ESOs outstanding at the end of the year are collected from SFAS No. 123 footnote disclosures or R.G. Associates' ESO database. Cash and short-term investments are Compustat #1. Total debt is (Compustat #9 + Compustat #34). Value of common shares repurchased is the dollar amount spent on acquiring the company's common stock (Compustat #115 – decrease in Compustat #130). Operating cash flows are Compustat #308.

whether the firm has subordinated debt (*SUBORD*), and capital intensity (*CAP_INTEN*). See Table 2 for the measurement of these control variables. The expected signs for these variables are presented in Table 4 through Table 9.

One limitation of my credit-rating model is that it does not take into account the potential endogeneity of *OPTIONVALUE* and *REPUR*. Core and Guay (1999) show that firms are more likely to use ESOs when there are greater operating uncertainties, when it is more difficult to monitor employees, and when the firm is more cash-constrained. Firms with ongoing share repurchase programs are likely to be those that are more mature and have plentiful cash flows. Since the former set of firm characteristics is associated with a higher credit risk and the latter set of firm characteristics points to a lower credit risk, failing to account for the endogeneity of option use and repurchase behavior may prevent meaningful interpretation of the coefficients. Thus, I supplement the ordered probit analysis with a simultaneous equations model where I explicitly model *RATING*, *OPTIONVALUE*, and *REPUR* and estimate the three equations simultaneously. See the Appendix for a detailed discussion of the simultaneous equations analysis.

IV. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

Panel A of Table 1 summarizes the formation of my sample. The initial sample begins with 497 S&P 500 firms from the 2003 version of the ESO database maintained by Jack Ciesielski of R.G. Associates, Inc. and 139 non-S&P 500 heavy option users from ExecuComp. This sample is chosen to ensure that sample firms have substantial outstanding ESOs to reduce the possibility that immaterial ESO obligations obscure creditors' assessment of ESOs' impact on creditworthiness. The sample period is limited to the three-year period 2001–2003 because detailed stock option information has to be manually collected from 10-K filings for non-S&P 500 firms. I also hand collect the maximum contractual life and weighted average remaining life of outstanding ESOs for all of my sample firms.[20]

To identify non-S&P 500 heavy option users, I calculate an option usage ratio by dividing the total number of stock options granted during the year by the number of outstanding common shares at the end of the year, and averaging over the three-year period between 2001 and 2003.[21] All non-S&P 500 firms are ranked within their S&P index groups (i.e., S&P MidCap, S&P SmallCap, and Non-S&P firms) by the option usage ratio. I retain firms ranked in the top 80 of each S&P index group and exclude firms with less than five years of data on Compustat and ExecuComp because some of my variables are measured over the past five years. These procedures reduce my non-S&P 500 sample to 139 firms.

Consistent with Bens et al. (2002; 2003), I exclude firms in the utilities (SIC 4900–4999) and financial services (SIC 6000-6999) sectors. My credit-rating analyses further require firms to have credit ratings on Compustat and all other data necessary to estimate the credit-rating model on Compustat, CRSP, and ExecuComp. These procedures yield a final sample of 990 firm-years, representing 356 firms. S&P 500 firm-years constitute 88.1 percent of the sample, followed by S&P MidCap, Non-S&P, and S&P SmallCap firms, which makes up 5.5 percent, 4.0 percent and 2.4 percent of the sample, respectively.[22]

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[20] R.G. Associates' ESO database includes most quantitative disclosures contained in the SFAS No. 123 footnote for S&P 500 companies. Specifically, the database contains information such as the number and weighted-average exercise prices for options outstanding at the end of the year and for options granted and exercised during the year. It also includes the assumptions used to estimate the fair values of options, including (1) risk-free interest rate, (2) expected life, (3) expected volatility, and (4) expected dividend yield. The data coverage starts from 1995, the first year when SFAS No. 123 went into effect.

[21] To be included in my sample, firms must have executive compensation data for 2003 in the July 2004 version of ExecuComp.

Panel B of Table 1 provides descriptive statistics for my sample firm-years. As expected, the sample firms are quite large, with average total assets of $15.6 billion (median $6.8 billion) and average market value of common equity of $18.6 billion (median $6.7 billion). The mean (median) total market capitalization is $24.4 ($9.4) billion. The sample firm-years are generally profitable with an average (median) return on assets of 0.035 (0.046). The average book-to-market ratio and leverage are 0.609 and 0.279, respectively. The average (median) number of ESOs granted to employees is about 2.3 percent (1.9 percent) of outstanding shares per year. On average, outstanding ESOs comprise 10.2 percent of outstanding shares with a fair market value of $412 million. To put the magnitude of a company's outstanding ESOs in perspective, I scale the fair value of outstanding ESOs by the company's most liquid assets (i.e., cash and short-term investments) and total debt (Compustat #9 + Compustat #34). For the average (median) firm-year in the sample, outstanding ESOs are about 1.33 (0.41) times its cash and short-term investments and about 41.2 percent (9.6 percent) of total debt. For the 551 firm-years with nonzero share repurchase value, the mean (median) cash spent on common share repurchases is $494 ($121) million. On average, repurchasing firms spent 29.7 percent of their operating cash flows to buy back their own shares.[23]

Panel C of Table 1 reports the median values of the variables presented in Panel B of Table 1 by industry. There is some industry concentration in my sample with durable manufacturers, computers, and retail industries making up over 50 percent of the sample. Transportation firms have the greatest total assets and market capitalization. Pharmaceutical firms are the most profitable and have the smallest book-to-market ratio. Computer firms have the lowest book leverage, grant the most ESOs as a percentage of outstanding shares to their employees, and have the greatest outstanding ESOs as a percentage of outstanding shares at the end of the year. Despite the greater growth opportunities in pharmaceutical and computer industries, as proxied by their relatively low book-to-market ratios, median firms in the pharmaceutical (computer) industry spent 40 percent (28 percent) of their operating cash flows repurchasing their own shares during the 2001–2003 period.

Table 2 reports descriptive statistics for the variables used in the ordered probit analyses. Except for the dependent variable *RATING*, all continuous variables are winsorized at the 1 and 99 percent levels to mitigate the influence of outliers. The median firm-year has a credit rating of 4.0, corresponding to the S&P letter grade between BBB− and BBB+. The mean (median) present value of the expected proceeds from the exercise of outstanding ESOs is 5.1 (3.2) percent of total assets and the mean (median) present value of expected tax benefits is 1.3 (0.5) percent of total assets. The mean (median) value of *OUTFLOW* suggests that the average (median) sample firm-year might incur a cash outflow equal to 10.3 (5.8) percent of its total assets to repurchase shares to satisfy or undo ESO exercise. The mean (median) value of *OPTIONVALUE* indicates that the average (median) net cash outflow upon ESO exercise is 4.0 (1.7) percent of total assets if the firm buys back the shares underlying exercised ESOs. The mean (median) sample firm-years spent 2.4 (0.9) percent of total assets repurchasing their common shares over the past three years. The average sample firm-year holds 11 percent of total assets in cash and short-term

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[22] The results are inferentially similar if I exclude non-S&P 500 companies.

[23] I exclude the 11 firm-years with negative operating cash flows from the calculation of this percentage because negative denominators result in a discontinuity in the percentage around zero.

TABLE 2

Descriptive Statistics for the Regression Variables (990 firm-year observations)

Variable	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.
RATING	4.167	1.084	4.000	4.000	5.000
PROCEEDS	0.051	0.057	0.014	0.032	0.066
TAX	0.013	0.023	0.001	0.005	0.015
OUTFLOW	0.103	0.128	0.026	0.058	0.131
OPTIONVALUE	0.040	0.066	0.007	0.017	0.042
REPUR	0.024	0.039	0.000	0.009	0.031
STDROA	0.048	0.068	0.016	0.028	0.051
RET	0.117	0.466	−0.152	0.065	0.320
CASH	0.112	0.136	0.022	0.062	0.147
FOCF	0.091	0.082	0.039	0.080	0.128
LEVERAGE	0.279	0.146	0.180	0.270	0.362
ROA	0.035	0.089	0.012	0.046	0.080
LOSS	0.090	0.286	0.000	0.000	0.000
INT_COV	16.028	26.109	4.499	8.262	15.943
SIZE	8.858	1.345	8.024	8.804	9.603
SUBORD	0.122	0.328	0.000	0.000	0.000
CAP_INTEN	0.564	0.351	0.293	0.480	0.790

Except for *RATING*, all continuous variables are winsorized at the 1% and 99% levels.

RATING is long-term domestic issuer credit rating (Compustat Quarterly data SPDRC) six months after the fiscal year ends. *SPDRC* is converted to *RATING* based on the conversion schedule in Ashbaugh-Skaife et al. (2006). *PROCEEDS* is expected proceeds from the exercise of outstanding ESOs, scaled by total assets. The expected proceeds are calculated as the second term of the Black-Scholes formula, $Xe^{-rt}N(d_2)$, multiplied by the number of outstanding ESOs, scaled by total assets. The Black-Scholes-Merton formula is as follows:

$$C = Se^{-dt}N(d_1) - Xe^{-rt}N(d_2)$$

where $d_1 = [\ln(S/X) + (r - d + 0.5\sigma^2) \times t] / [\sigma \sqrt{t}]$ and $d_2 = d_1 - \sigma \sqrt{t}$, where S is stock price on the valuation date, X is exercise price of the option, r is the risk-free interest rate, d is the expected annual dividend yield, σ is the expected annual stock price volatility, and t is the expected life of the option in years. $N(.)$ is the cumulative normal distribution function. *TAX* is expected tax benefits from ESO exercise, scaled by total assets. The expected tax benefits from option exercise are estimated as the probability-weighted present value of the exercise-date intrinsic value (i.e., the Black-Scholes value) of outstanding ESOs multiplied by the company's marginal tax rate taken from Graham's marginal tax rate database. *OUTFLOW* is the present value of the expected cash that the company has to spend in order to buy back enough shares to satisfy or undo ESO exercise, calculated as the first term of the Black-Scholes formula used to calculate the fair value of a call option multiplied by the number of outstanding ESOs and scaled by total assets. *OPTIONVALUE* is the fair value of outstanding ESOs multiplied by one minus the company's marginal tax rate and scaled by total assets. The fair value of outstanding ESOs is computed as the fair value per option multiplied by the number of options outstanding at the end of the fiscal year. The fair value per option as of the end of the fiscal year is calculated based on the Black and Scholes (1973) option valuation model, as modified by Merton (1973) to account for dividend payments, along with the following estimated model assumptions: (1) Volatility: estimated according to the guidance of SFAS No. 123R as the standard deviation of the natural logarithm of monthly CRSP price relatives (P_n / P_{n-1}) times the square root of 12 and is measured over the past 60 months. (2) expected life of outstanding ESOs: computed following Li (2002) as the original expected life of outstanding ESOs when they were first issued minus the number of years that these ESOs have been outstanding, where the number of years that ESOs have been outstanding is calculated as their maximum contractual life minus the remaining contractual life, both of which are disclosed in the SFAS No. 123 footnote. Since firms do not provide information about the original expected life for outstanding ESOs, I assume that outstanding ESOs have the same original expected life as newly issued ESOs. (3) Risk-free interest rate: measured as the yield on U.S. Treasury securities with a remaining time

(continued on next page)

TABLE 2 (continued)

to maturity similar to the expected life calculated in assumption (2) above. (4) Dividend yields are those used by ExecuComp to estimate the fair value of executive stock option grants (ExecuComp data *BS _ YIELD*). Following Core andGuay (2002), I value a firm's outstanding options as if they were a single option grant using the disclosed weighted average exercise price for outstanding ESOs, the fiscal year-end stock price, and the above four model assumptions as model inputs. The fair value per option is then multiplied by the number of outstanding ESOs to obtain the fair value of outstanding ESOs. *REPUR* is the three-year average of [(purchase of common and preferred stock for year *t* (Compustat #115) − decrease in preferred stock (Compustat #130) from year *t*−1 to year *t*)/total assets]. *STDROA* is the standard deviation of *ROA* calculated over the five-year period between year *t*–4 and year *t*, where *ROA* is defined as income before extraordinary items (Compustat #18) divided by total assets (Compustat #6). *RET* is the buy-and-hold stock return over the current year. *CASH* is the balance of cash and short-term investments (Compustat #1) scaled by total assets. *FOCF* is the operating cash flows (Compustat #308) minus depreciation and amortization (Compustat #125) plus R&D expenditures (Compustat #46), scaled by total assets. *LEVERAGE* is the total debt (Compustat #9 + Compustat #34) divided by total assets. *ROA* is net income before extraordinary items (Compustat #18) scaled by total assets. *LOSS* equals 1 if net income before extraordinary items is negative in the current and prior fiscal year, and 0 otherwise. *INT _ COV* is the operating income before depreciation (Compustat #13) divided by interest expense (Compustat #15). If interest expense is 0, then *INT _ COV* is set equal to the maximum *INT _ COV* in the sample. *SIZE* is the natural log of total assets. *SUBORD* equals 1 if the firm has subordinated debt, and 0 otherwise. *CAP _ INTEN* is gross property, plant, and equipment (Compustat #7) divided by total assets.

investments and is generally profitable, generates positive free operating cash flows, finances its total assets with 28 percent of debt, and has an operating income that is 16 times its interest expense. About 12 percent of the sample has subordinated debt.

Table 3 reports pairwise correlations among selected variables included in the credit-rating model. Pearson product-moment (Spearman rank-order) correlations are presented in the upper right (lower left) triangle. Consistent with H1, credit ratings are positively correlated with expected exercise proceeds. Although the Spearman correlation between credit ratings and tax benefits is positive as predicted by H1, the Pearson correlation between the two is not statistically different from zero. Consistent with H2, *OUTFLOW* and *OPTIONVALUE* are negatively correlated with *RATING*. *REPUR* is positively correlated with *RATING*, suggesting that repurchasing firms typically have better credit quality. Consistent with prior literature, credit ratings are positively associated with *FOCF*, *SIZE*, and *ROA* and negatively associated with *STDROA*. *PROCEEDS* and *OUTFLOW* have a Pearson correlation coefficient of 0.90. This is not surprising because the two variables share the same multiplier (number of shares outstanding), the same scalar (total assets), and the same set of Black-Scholes assumptions. This high correlation raises the concern of the multicollinearity problem when *PROCEEDS* and *OUTFLOW* are both included in the model. The presence of multicollinearity inflates the coefficient estimate's standard error so caution should be used when interpreting the results for Equation (1) when *PROCEEDS*, *OUTFLOW*, and *TAX* are included in the model at the same time.

V. EMPIRICAL RESULTS

Ordered Probit Results

In this section, I examine whether the expected cash inflows from ESO exercise (cash outflows due to ESO-related repurchases) are positively (negatively) associated with creditworthiness as hypothesized by the equity infusion (predicting repurchase) hypothesis. To benchmark my results with prior studies, Model (1) in Table 4 reports the ordered probit results including only the firm characteristics used by Ashbaugh-Skaife et al. (2006) to explain credit ratings. All of the firm characteristics are significant in the directions documented by Ashbaugh-Skaife et al. (2006). Model (2) in Table 4 reports the results including the full set of control variables in Equation (1). As expected, the coefficient on *STDROA* is significantly negative, consistent with credit-rating

TABLE 3

Correlation Matrix on Regression Variables

(n = 990)

	RATING	*PROCEEDS*	*TAX*	*OUTFLOW*	*OPTION_ VALUE*	*REPUR*	*STDROA*	*RET*	*CASH*	*FOCF*	*LEVERAGE*	*ROA*	*LOSS*	*INT_COV*	*SIZE*	*SUBORD*	*CAP_INTEN*
RATING		**0.12**	−0.02	**−0.05**	**−0.21**	**0.26**	**−0.40**	**−0.11**	**−0.25**	**0.30**	**−0.23**	**0.50**	**−0.41**	**0.15**	**0.64**	**−0.12**	**0.07**
PROCEEDS	**0.23**		**0.66**	**0.90**	**0.71**	**0.39**	**0.09**	**0.15**	**0.40**	**0.58**	**−0.26**	**0.33**	**−0.13**	**0.42**	**0.25**	**−0.16**	**−0.24**
TAX	**0.22**	**0.74**		**0.79**	**0.67**	**0.27**	**0.10**	**0.15**	**0.32**	**0.43**	**−0.20**	**0.26**	**−0.09**	**0.40**	**0.10**	**−0.09**	**−0.23**
OUTFLOW	**0.13**	**0.94**	**0.77**		**0.91**	**0.32**	**0.20**	**0.21**	**0.47**	**0.54**	**−0.22**	**0.26**	**−0.06**	**0.39**	**0.13**	**−0.13**	**−0.26**
OPTION_VALUE	0.01	**0.85**	**0.69**	**0.95**		**0.21**	**0.29**	**0.22**	**0.47**	**0.41**	**−0.14**	**0.13**	0.02	**0.25**	**0.01**	**−0.09**	**−0.23**
REPUR	**0.37**	**0.36**	**0.31**	**0.30**	**0.21**		−0.00	−0.01	**0.08**	**0.48**	**−0.09**	**0.37**	**−0.16**	**0.24**	**0.17**	**−0.14**	**−0.06**
STDROA	**−0.36**	**0.11**	−0.01	**0.16**	**0.19**	**−0.06**		0.03	**0.42**	0.02	**0.10**	**−0.47**	**0.41**	−0.02	**−0.21**	**−0.07**	**−0.11**
RET	−0.01	**0.18**	**0.20**	**0.21**	**0.23**	−0.01	**−0.12**		0.02	0.04	0.05	**0.18**	**−0.00**	0.01	−0.03	**−0.01**	−0.01
CASH	**−0.16**	**0.33**	**0.24**	**0.37**	**0.37**	**−0.02**	**0.39**	−0.04		**0.31**	**−0.23**	**−0.13**	**0.18**	**0.26**	−0.01	**−0.06**	**−0.37**
FOCF	**0.29**	**0.58**	**0.48**	**0.55**	**0.47**	**0.38**	**0.11**	**0.06**	**0.29**		**−0.33**	**0.46**	**−0.20**	**0.33**	**0.26**	**−0.20**	**−0.17**
LEVERAGE	**−0.19**	**−0.31**	**−0.25**	**−0.30**	**−0.27**	**−0.09**	**−0.06**	0.01	**−0.31**	**−0.36**		**−0.16**	**0.11**	**−0.40**	**−0.22**	**0.21**	**0.15**
ROA	**0.50**	**0.56**	**0.53**	**0.51**	**0.40**	**0.43**	**−0.25**	**0.17**	0.03	**0.61**	**−0.24**		**−0.53**	**0.20**	**0.32**	**−0.06**	0.01
LOSS	**−0.38**	**−0.19**	**−0.24**	**−0.14**	**−0.07**	**−0.22**	**0.37**	**−0.12**	**0.20**	**−0.21**	**0.08**	**−0.46**		**−0.12**	**−0.28**	**0.07**	−0.01
INT_COV	**0.50**	**0.55**	**0.51**	**0.51**	**0.41**	**0.39**	**−0.09**	0.05	**0.21**	**0.63**	**−0.62**	**0.70**	**−0.39**		**0.23**	**−0.09**	**−0.14**
SIZE	**0.57**	**0.23**	**0.19**	**0.16**	**0.07**	**0.19**	**−0.15**	0.00	−0.01	**0.21**	**−0.18**	**0.31**	**−0.25**	**0.34**		−0.04	−0.03
SUBORD	**−0.14**	**−0.20**	**−0.11**	**−0.17**	**−0.13**	**−0.14**	**−0.09**	−0.01	**−0.05**	**−0.23**	**0.20**	**−0.15**	**0.07**	**−0.23**	−0.02		**−0.10**
CAP_ INTEN	**0.11**	**−0.26**	**−0.20**	**−0.28**	**−0.27**	0.00	**−0.10**	0.00	**−0.40**	**−0.15**	**0.20**	−0.01	−0.02	**−0.07**	−0.03	**−0.10**	

All variables are as defined in Table 2. Pearson (Spearman) correlation coefficients are in the upper (lower) triangle.

Bold text indicates significance at the 0.1 level or better.

TABLE 4
Ordered Probit Regressions of the Effects of Outstanding ESOs on Credit Ratings (Dependent Variable = *RATING*)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)	Coefficient (t-statistic) Model (3)	Coefficient (t-statistic) Model (4)	Coefficient (t-statistic) Model (5)	Coefficient (t-statistic) Model (6)
Control Variables							
STDROA	–		−3.385**	−2.629	−2.776*	−2.964*	−3.234**
			(1.96)	(1.58)	(1.65)	(1.84)	(1.97)
RET (÷ 10^2)	?		−0.416***	−0.359***	−0.335***	−0.352	−0.331***
			(5.94)	(4.92)	(4.80)	(4.76)	(4.73)
CASH	?		−1.364**	−1.176**	−1.057*	−1.205**	−1.141**
			(2.46)	(2.14)	(1.93)	(2.14)	(2.01)
FOCF	+		4.129***	4.173***	5.006***	3.695***	4.388***
			(4.32)	(4.69)	(5.44)	(4.18)	(4.77)
LEVERAGE	–	−2.343***	−2.183***	−2.230***	−2.153***	−2.407***	−2.409***
		(5.22)	(4.71)	(4.71)	(4.54)	(4.90)	(4.86)
ROA	+	6.398***	5.144***	5.248***	5.727***	4.942***	5.343***
		(5.66)	(5.02)	(5.35)	(5.69)	(2.67)	(5.34)
LOSS	–	−0.661***	−0.522***	−0.545***	−0.574***	−0.496***	−0.539***
		(3.44)	(2.85)	(2.95)	(3.15)	(2.66)	(2.95)
INT_COV (÷10^2)	+	0.5108**	0.406*	0.199	0.4544*	0.173	0.314
		(2.13)	(1.65)	(0.73)	(1.80)	(0.62)	(1.17)
SIZE	+	0.614***	0.607***	0.591***	0.581***	0.623***	0.605***
		(10.23)	(9.95)	(9.53)	(9.22)	(9.73)	(9.31)
SUBORD	–	−0.476***	−0.456***	−0.417**	−0.472***	−0.400**	−0.450**
		(2.75)	(2.59)	(2.40)	(2.62)	(2.29)	(2.46)
CAP_INTEN	+	0.447**	0.259	0.200	0.191366	0.189	0.158
		(1.97)	(1.06)	(0.86)	(0.81)	(0.81)	(0.67)

(continued on next page)

TABLE 4 (continued)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)	Coefficient (t-statistic) Model (3)	Coefficient (t-statistic) Model (4)	Coefficient (t-statistic) Model (5)	Coefficient (t-statistic) Model (6)
Hypothesized Variables							
PROCEEDS	+			15.180***		13.349***	
				(5.20)		(4.70)	
TAX	+			8.923**		9.441**	
				(2.31)		(2.35)	
OUTFLOW	−			−8.152***		−6.375***	
				(5.76)		(4.35)	
OPTIONVALUE	−				−4.248***		−2.293**
					(4.41)		(2.33)
REPUR	?					8.122***	6.464***
						(3.98)	(3.62)
REPUR* OUTFLOW	−					−24.775***	
						(4.46)	
REPUR* OPTIONVALUE	−						−34.350***
							(4.84)
Industry dummies		Yes	Yes	Yes	Yes	Yes	Yes
Sample size		990	990	990	990	990	990
Pseudo R^2		0.3123	0.3393	0.3595	0.3502	0.3686	0.3584

*,**,***Significant at the 0.1, 0.05 and 0.01 levels, respectively, (two-tailed). Robust standard errors that allow heteroscedasticity and dependence for observations of the same firm (cluster) are used to calculate t-statistics. All variables are as defined in Table 2.

agencies' aversion to operating risk. Consistent with Bhojraj and Sengupta (2003), *RET* is negatively associated with *RATING*. Bhojraj and Sengupta (2003) conjecture that this negative coefficient is driven by the higher risk associated with superior stock returns. The coefficient on *CASH* is significantly negative, consistent with Opler et al.'s (1999) finding that riskier firms carry more *CASH*. As expected, the proxy for the firm's cash generating ability, *FOCF*, is positively associated with credit ratings.

Models (3) and (4) in Table 4 present the estimation results for Equation (1) without conditioning on the firm's repurchase intensity. Consistent with H1 (equity infusion hypothesis), the coefficients on *PROCEEDS* and *TAX* are significantly positive at conventional levels. Consistent with H2 (predicting repurchase hypothesis), the coefficients on *OUTFLOW* and *OPTIONVALUE* are significantly negative at the 1 percent level. These results suggest that on average, ESO-related cash inflows (outflows) have a favorable (unfavorable) effect on credit ratings. Models (5) and (6) examine whether the unfavorable effects of *OUTFLOW* and *OPTIONVALUE* differ across firms with different degrees of past repurchase intensity. Consistent with H3, the coefficients on *REPUR* × *OUTFLOW* and *REPUR* × *OPTIONVALUE* are both significantly negative, suggesting that the negative effect of ESO-related cash outflows is more pronounced for firms with higher repurchase intensity. Taken together, these findings are consistent with the hypotheses that credit analysts incorporate the information conveyed by outstanding ESOs regarding potential equity infusion and repurchase outlays in their credit risk assessments. The concern over repurchase outlays, however, outweighs the favorable effect of equity infusion thereby resulting in an overall adverse impact of outstanding ESOs on credit ratings.

Because the ordered probit coefficients cannot be interpreted as the marginal change in the dependent variable given a one-unit change in the independent variables, I follow Ashbaugh-Skaife et al. (2006) and partition the seven levels of credit ratings into two classes—investment grade and speculative grade—to evaluate the economic significance of the ESO-related cash flow measures via their marginal effects from the probit model. The marginal effect is measured as the change in the probability of receiving an investment-grade rating for a change in the independent variable from the 25th percentile to the 75th percentile of the variable in the sample, holding all other independent variables at their mean values. Table 5 presents these results.

The dependent variable in Table 5 is *INVGRADE*, which takes on the value of 1 if the credit rating is equal to or above BBB−, and 0 otherwise. As reported in Model (1) of Table 5, the marginal effects of *PROCEEDS* and *TAX* are 0.202 and 0.038, respectively, suggesting that a firm in the 75th percentile of *PROCEEDS* (*TAX*) is 20.2 (3.8) percentage points more likely to receive an investment-grade rating than a firm in the 25th percentile of *PROCEEDS* (*TAX*). To facilitate the comparison of the differential impact of ESOs on *RATING* across firms with high and low repurchase intensity, I create an indicator variable, *HIGHREPUR*, set equal to 1 if the firm's repurchase intensity over the past three years (i.e., *REPUR*) is in the top quartile of the sample, and 0 otherwise. The differential adverse impact of ESO-related cash outflows between firms with high and low repurchase intensity is obtained by examining the marginal effects of *HIGHREPUR* × *OUTFLOW* and *HIGHREPUR* × *OPTIONVALUE*. The marginal effect of *OUTFLOW* (*HIGHREPUR* × *OUTFLOW*) is −0.235 (−0.080), suggesting that moving from the lower to the upper quartile of *OUTFLOW* decreases the probability of receiving an investment-grade rating by 23.5 (31.5) percent for firms with low (high) repurchase intensity.

Given that the credit-harming effect of *OUTFLOW* will be partially offset by the credit-enhancing effects of *PROCEEDS* and *TAX*, model (2) of Table 5 reports the marginal effect analysis combining the three sources of ESO-related cash flows. The marginal effects of *OPTIONVALUE* and *HIGHREPUR* × *OPTIONVALUE* are −0.046 and −0.029, respectively, implying that an increase in *OPTIONVALUE* from the lower to the upper quartile decreases the

TABLE 5

Probit Analysis of the Effect of Outstanding Employee Stock Options on Credit Ratings (Dependent Variable = *INVGRADE*)

		Model (1)		Model (2)	
Independent Variables	**Predicted Sign**	**Coefficient (t-statistic)**	**Marginal Effect**	**Coefficient (t-statistic)**	**Marginal Effect**
Control Variables					
STDROA	−	−2.034		−1.457	
		(1.056)	−0.013	(0.764)	−0.012
RET	?	−0.183*		−0.186*	
		(1.65)	−0.016	(1.79)	−0.010
CASH	?	−2.199***		−1.952**	
		(2.63)	−0.049	(2.44)	−0.050
FOCF	+	4.930***		5.609***	
		(3.58)	0.079	(3.95)	0.099
LEVERAGE	−	−2.412***		−2.606***	
		(3.10)	−0.079	(3.32)	−0.082
ROA	+	4.280***		5.241***	
		(2.87)	0.052	(3.38)	0.062
LOSS	−	−0.723**		−0.830***	
		(2.33)	−0.180	(2.65)	−0.219
INT_COV ($\div 10^2$)	+	0.125		0.223	
		(0.239)	0.003	(0.46)	0.004
SIZE	+	0.788***		0.754***	
		(7.23)	0.241	(7.32)	0.233
SUBORD	−	−0.693***		−0.765***	
		(2.74)	−0.167	(−2.93)	−0.201
CAP_INTEN	+	0.217		0.229	
		(0.60)	0.019	(0.65)	0.021
Hypothesized Variables					
PROCEEDS	+	22.029***			
		(3.49)	0.202		
TAX	+	14.965***			
		(2.57)	0.038		
OUTFLOW	−	−10.333***			
		(3.98)	−0.235		
OPTIONVALUE	−			−3.007**	
				(2.41)	−0.046
HIGHREPUR	?	1.095***		0.980***	
		(3.01)	0.075	(3.50)	0.089
HIGHREPUR* OUTFLOW	−	−5.009***			
		(3.71)	−0.080		
HIGHREPUR* OPTIONVALUE	−			−9.535***	
				(4.49)	−0.029
Industry dummies		Yes		Yes	
Sample size		990		990	

(continued on next page)

TABLE 5 (continued)

Independent Variables	Predicted Sign	Model (1)		Model (2)	
		Coefficient (t-statistic)	Marginal Effect	Coefficient (t-statistic)	Marginal Effect
Pseudo R^2		0.5671		0.5535	

*, **, *** Significant at the 0.1, 0.05 and 0.01 levels, respectively (two-tailed). Robust standard errors that allow heteroscedasticity and dependence for observations of the same firm (cluster) are used to calculate t-statistics.

INVGRADE takes on the value of 1 if the credit rating is BBB– and above (i.e., investment grade), and zero otherwise. *HIGHREPUR* is an indicator variable set equal 1 if the firm's repurchase intensity over the past three years (i.e., *REPUR*) is in the top quartile of the sample, and 0 otherwise.

All other variables are as defined in Table 2.

probability of receiving an investment-grade rating by 7.5 percent for firms with high repurchase intensity, a magnitude similar to the marginal effects of book leverage, free cash flows, and accounting performance.[24]

Endogeneity of *OPTIONVALUE* and *REPUR*

Models (1) and (2) in Table 6 investigate the extent to which the determinants of *OPTIONVALUE* and *REPUR* respectively affect *RATING*. Collectively, the determinants of *OPTIONVALUE* exhibit considerable explanatory power of *RATING* as evidenced by the substantial increase in pseudo R^2 from model (2) of Table 4 (pseudo $R^2 = 0.3393$) to model (1) of Table 6 (pseudo $R^2 = 0.4255$). By contrast, model (2) of Table 6 shows that the determinants of *REPUR* are associated with *RATING* to a lesser extent since the inclusion of the determinants of *REPUR* only increase pseudo R^2 slightly from 0.3393 to 0.3521. To investigate whether excluding the determinants of *OPTIONVALUE* and *REPUR* from Equation (1) affects the primary results reported in Table 4, I re-estimate Equation (1) including the determinants of *OPTIONVALUE* and *REPUR*. As shown in Models (3) and (4) in Table 6, the coefficients on hypothesized variables continue to be significant in the expected directions at conventional levels, suggesting that evidence supporting the equity infusion and predicting repurchase hypotheses presented in Table 4 is robust to controls for the economic determinants of *OPTIONVALUE* and *REPUR*.

Table 7 approaches the data using a simultaneous equations model to address the endogeneity of *OPTIONVALUE* and *REPUR*.[25] As indicated in the *RATING* model in Table 7, the coefficients on *OPTIONVALUE* and *REPUR* × *OPTIONVALUE* remain significantly negative. The coefficients on most of other variables are consistent with the ordered probit results reported in Panel A of Table 4. The determinants of *OPTIONVALUE* are generally significant in the directions documented by prior literature. Results for the *REPUR* equation indicate that firms with better credit ratings, generating more abundant free cash flows, raising more debt in recent years, having a lower cost of capital, having a leverage ratio below the target leverage, and experiencing more

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[24] Because exercise proceeds and tax benefits will occur when ESOs are exercised regardless of whether the firm repurchases its shares, it is more appropriate to focus on the marginal effect of *OUTFLOW* rather than that of *OPTIONVALUE* when evaluating the economic significance of ESO-related repurchases.

[25] See the Appendix for a discussion of the economic determinants of *OPTIONVALUE* and *REPUR*.

TABLE 6

aOrdered Probit Regressions of the Effects of Outstanding ESOs on Credit Ratings Including the Economic Determinants of *OPTIONVALUE* and *REPUR* (Dependent Variable = *RATING*)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)	Coefficient (t-statistic) Model 3	Coefficient (t-statistic) Model (4)
Control Variables					
STDROA	–	−2.537	−2.813*	−2.102	−2.230
		(1.45)	(2.61)	(1.28)	(1.37)
RET(÷10^2)	?	−0.505***	−0.261***	−0.382***	−0.391***
		(5.05)	(3.63)	(3.82)	(3.87)
CASH	?	−1.136**	−1.354**	−1.084**	−1.051*
		(2.08)	(2.40)	(1.93)	(1.87)
FOCF	+	1.427	4.614***	1.999**	2.085**
		(1.38)	(4.97)	(2.00)	(2.08)
LEVERAGE	–	−2.038***	−1.423**	−1.017	−1.058
		(4.08)	(2.45)	(1.36)	(1.42)
ROA	+	1.583**	5.841***	2.123***	2.139***
		(2.01)	(5.65)	(2.59)	(2.61)
LOSS	–	−0.365*	−0.690***	−0.363*	−0.369*
		(1.73)	(3.37)	(1.74)	(1.77)
INT_COV (÷10^2)	+	0.214	0.401	0.065	0.076
		(0.75)	(1.57)	(0.22)	(0.28)
SIZE	+	0.737***	0.566***	0.671***	0.672***
		(4.72)	(8.98)	(4.09)	(4.10)
SUBORD	–	−0.179	−0.395**	−0.148	−0.156
		(1.01)	(2.19)	(0.81)	(0.85)

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TABLE 6 (continued)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)	Coefficient (t-statistic) Model 3	Coefficient (t-statistic) Model (4)
CAP_INTEN	+	0.063	0.107	−0.081	−0.098
		(0.25)	(0.44)	(0.32)	(0.38)
Hypothesized Variables					
PROCEEDS	+			6.708**	
				(2.22)	
TAX	+			7.130*	
				(1.95)	
OUTFLOW	−			−4.692***	
				(2.83)	
OPTIONVALUE	−				−3.248***
					(2.60)
REPUR	?			4.651*	3.206
				(1.94)	(1.46)
*REPUR * OUTFLOW*	−			−13.606**	
				(2.46)	
REPUR OPTIONVALUE*	−				−15.526**
					(2.03)
Determinants of *OPTIONVALUE*					
IDRISK	−	−1.295***		−1.329***	−1.360***
		(6.85)		(6.68)	(6.97)

(continued on next page)

TABLE 6 (continued)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)	Coefficient (t-statistic) Model 3	Coefficient (t-statistic) Model (4)
RDINTEN	−	−1.754		−1.693	−1.492
		(0.64)		(0.60)	(0.54)
GROW_EMPL	−	−0.270***		−0.016	−0.016
		(2.70)		(1.45)	(1.45)
B2M	−	−3.090***		−3.083***	−3.201***
		(7.29)		(6.94)	(7.26)
LOGSALES	+	−0.137		−0.084	−0.092
		(0.90)		(0.53)	(0.58)
CONSTRAIN	−	−0.419		−0.643	−0.690
		(0.37)		(0.44)	(0.47)
AVGROA	+	2.690		2.312	2.300
		(1.64)		(0.93)	(1.29)
RET3YR	?	−0.222***	−0.083	−0.056	−0.045
		(3.47)	(1.63)	(0.93)	(0.71)
Determinants of *REPUR*					
ISSUE_DEBT	−		−0.294*	−0.266	−0.266
			(1.68)	(1.55)	(1.55)
WACC	?		2.199	8.897*	8.897*
			(0.55)	(1.91)	(1.91)
DEV_LEV	?		−0.583	−0.671	−0.671
			(1.46)	(1.24)	(1.24)

(continued on next page)

TABLE 6 (continued)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)	Coefficient (t-statistic) Model 3	Coefficient (t-statistic) Model (4)
EXERCISED	–		−20.278***	−23.722***	−23.722***
			(3.80)	(3.88)	(3.88)
Industry dummies		Yes	Yes	Yes	Yes
Sample size		956	961	954	954
Pseudo R^2		0.4255	0.3521	0.4493	0.4478

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*, **, *** Significant at the 0.1, 0.05 and 0.01 levels (two-tailed). Robust standard errors that allow heteroscedasticity and dependence for observations of the same firm (cluster) are used to calculate t-statistics.

INDOPTION is the average *ESOGRANT* of other firms in the same Fama-French 48 industry group, where *ESOGRANT* is calculated as the number of individual executive option grants (ExecuComp data *NUMSECUR*) divided by the percent of total option grants in a given year represented by the executive option grants (ExecuComp data *PCTTOTOP*) and scaled by the number of shares outstanding at the end of the year. *IDRISK* is the logarithm of idiosyncratic risk, measured as the standard deviation of the market model residuals calculated using the firm's stock return data for the preceding 36 months. *RD* is the R&D intensity, calculated as the three-year average of R&D expenditures (Compustat #46) scaled by total assets (Compustat #6). *GROW_EMPL* is the growth option per employee, measured as the difference between the market value of equity and the book value of equity divided by the number of employees. *B2M* is the book-to-market ratio, calculated total assets/[book value of liabilities (Compustat #181) + market value of equity (Compustat #25 * Compustat #199)]. *LOGSALES* is the logarithm of total sales (Compustat #12). *CONSTRAIN* is the three-year average of [cash dividends (Compustat #127) + cash used in investing activities (−Compustat #311) − cash flow from operations (Compustat #308)]/total assets. *AVGROA* is the three-year average *ROA*, where *ROA* is income before extraordinary items divided by total assets. *RET3YR* is the three-year buy and hold returns calculated using CRSP monthly returns over $t-2$ and t period. *INDREPUR* is the average *REPUR* of other firms in the same Fama-French 48 industry, where *REPUR* is the three-year average of [(purchase of common and preferred stock for year t (Compustat #115) − decrease in preferred stock (Compustat #130) from year $t-1$ to year t)/total assets]. *DEV_LEV* is the difference between the firm's leverage and its target leverage ratio at the beginning of the three-year period (i.e., year $t-2$), where the firm's target leverage ratio as the median leverage ratio of all firms within the same Fama-French 48 industry. *ISSUE_DEBT* is the amount of debt raised over the past three years scaled by total assets at the end of the year, where the amount of debt raised in a particular year is measured as the increase in total debt Δ(Compustat #9 + Compustat #34) plus reduction in long-term debt (Compustat #114). *EXERCISEDS* is the number of ESOs exercised during year t scaled by total assets. *WACC* is $COD \times DEBT/(DEBT+EQUITY) + COE \times EQUITY/(DEBT+EQUITY)$], where *COD* and *COE* are the industry cost of debt and industry cost of equity, respectively, taken from Damodaran's cost of capital database. *DEBT* is the book value of debt. *EQUITY* is the book value of equity (Compustat #60).

All other variables are as defined previously.

TABLE 7

Simultaneous Equations Analysis of the Effects of Outstanding ESOs on Credit Ratings

	RATING		*OPTIONVALUE*		*REPUR*	
Dependent Variables	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**
Intercept	?	−0.586 (−1.07)	?	0.151*** (7.85)	?	−0.032 (−0.03)
RATING			−	−0.014*** (−3.49)	+	0.421** (2.21)
OPTIONVALUE	−	−2.732*** (−5.57)				
REPUR	?	1.299 (1.24)				
REPUR× *OPTIONVALUE*	−	−7.701** (−2.10)				
STDROA	−	−0.355 (−0.52)				
RET (÷10^2)	?	−0.184*** (−4.54)				
CASH	?	−0.828*** (−2.73)				
FOCF	+	1.568*** (3.41)			+	0.245*** (4.95)
LEVERAGE	−	−0.791*** (−2.87)				
ROA	+	1.443*** (3.47)				

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TABLE 7 (continued)

	RATING		*OPTIONVALUE*		*REPUR*	
Dependent Variables	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**
LOSS	–	−0.177**				
		(−2.00)				
INT_COV	+	0.19				
$(\div 10^2)$		(1.25)				
SIZE	+	0.402***				
		(14.52)				
SUBORD	–	−0.201**				
		(−2.02)				
CAP_INTEN	+	0.021				
		(0.16)				
IDRISK			+	0.018***		
				(3.10)		
RD $(\div 10^2)$			+	0.326***		
				(3.68)		
GROW_EMPL			+	0.025***		
				(4.84)		
B2M			–	−0.084***		
				(−7.01)		
LOGSALES			+	0.005*		
				(1.71)		

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TABLE 7 (continued)

	RATING		*OPTIONVALUE*		*REPUR*	
Dependent Variables	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**
CONSTRAIN			+	−0.040		
				(−0.80)		
AVGROA			+	0.020		
				(0.35)		
RET3YR			+	0.020***	−	−0.028
				(3.92)		(−0.16)
ISSUE_DEBT ($\div 10^2$)					+	0.011*
						(1.65)
WACC					−	−0.422***
						(−2.73)
DEV_LEV					−	−0.044***
						(−3.07)
EXERCISED					+	0.521***
						(2.86)
INDRATING	+	0.259**				
		(2.05)				
INDOPTION			+	0.917***		
				(3.91)		
INDREPUR					+	1.549***
						(2.64)
Industry dummies		Yes		Yes		Yes

(continued on next page)

TABLE 7 (continued)

	RATING		*OPTIONVALUE*		*REPUR*	
Dependent Variables	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**	**Predicted Sign**	**Coefficient (t-statistic)**
Adj. R2		0.6874		0.5991		0.3376
n		954		954		954

*, **, *** Significant at the 0.1, 0.05 and 0.01 levels, respectively (two-tailed). Robust standard errors that allow heteroscedasticity and dependence for observations of the same firm (cluster) are used to calculate t-statistics.

INDRATING is the average *RATING* of other firms in the same Fama-French 48 industry group. *IDRISK* is the logarithm of idiosyncratic risk, measured as the standard deviation of the market model residuals calculated using the firm's stock return data for the preceding 36 months. *RD* is the R&D intensity, calculated as the three-year average of [R&D expenditures (Compustat #46)/total assets (Compustat #6)]. *GROW_EMPL* is the growth option per employee, measured as the difference between the market value of equity and the book value of equity divided by the number of employees. *B2M* is the book-to-market ratio, calculated total assets/[book value of liabilities (Compustat #181) + market value of equity (Compustat #25 * Compustat #199)]. *LOGSALES* is the logarithm of total sales (Compustat #12). *CONSTRAIN* is the three-year average of [cash dividends (Compustat #127) + cash used in investing activities (– Compustat #311) – cash flow from operations (Compustat #308)]/total assets. *AVGROA* is the average *ROA* calculated over the three-year period between t–2 and t, where *ROA* is income before extraordinary items divided by total assets. *RET3YR* is the three-year buy and hold returns calculated using CRSP monthly returns over the t–2 and t period. *ISSUE_DEBT* is the amount of debt raised over the past three years scaled by total assets at the end of the year, where the amount of debt raised in a particular year is measured as the increase in total debt Δ(Compustat # 9 + Compustat #34) plus reduction in long-term debt (Compustat #114). *WACC* is the *COD* × *DEBT* / (*DEBT* + *EQUITY*) + *COE* × *EQUITY* / (*DEBT* + *EQUITY*)], where *COD* and *COE* are the industry cost of debt and equity, respectively, taken from Damodaran's cost of capital database; *DEBT* is the book value of debt; *EQUITY* is the book value of equity (Compustat #60). *DEV_LEV* is the difference between the firm's leverage and its target leverage ratio at the beginning of the three-year period (i.e., year t–2), where the firm's target leverage ratio is the median leverage ratio of all firms with the same Fama-French 48 industry. *EXERCISEDS* is the number of ESOs exercised during the year scaled by the number of outstanding shares at the end of the year. *INDOPTION* is the average *ESOGRANT* scaled by the number of shares outstanding at the end of the year for all firms, excluding firm i, in the same Fama-French 48 industry group, where *ESOGRANT* is calculated as the number of individual executive option grants (ExecuComp data *NUMSECUR*) divided by the percent of total option grants in a given year represented by the executive option grants (ExecuComp data *PCTTOTOP*). *INDREPUR* is the average *REPUR* for all firms in the same Fama-French 48 industry, where *REPUR* is the three-year average of [(purchase of common and preferred stock for year t (Compustat#115) – decrease in preferred stock (Compustat #130) from year t–1 to year t)/total assets].

All other variables are as defined previously.

ESO exercises, tend to repurchase more. As expected, the industry level option use, *INDOPTION*, and repurchase behavior, *INDREPUR*, exhibit significant predictive power in the *OPTIONVALUE* and *REPUR* equations, respectively.[26]

VI. ADDITIONAL ANALYSES

Direction of Causality

The cross-sectional analyses in Section V suggest that higher levels of *OPTIONVALUES* are associated with poor credit ratings, consistent with the notion that credit-rating agencies are concerned about potential net cash outflows due to share repurchases around ESO exercise. It is possible that the causality also runs in the opposite direction. Because granting ESOs requires no cash outlay, firms with liquidity problems and thus poor credit quality are more likely to use ESOs in lieu of cash compensation to conserve scarce cash. While I address this simultaneity using the simultaneous equations estimation in Section V, Larcker and Rusticus (2005) suggest that the instrumental variables approach is only as good as the selection of instruments. To enhance the robustness of my primary findings and provide further evidence on the direction of causality, I examine whether the change in outstanding ESOs explains the one-year-ahead change in credit ratings. The changes specification controls for firm-specific factors that are constant over time and thus mitigates the concern that some omitted firm characteristics are driving the results.

Table 8 reports the results of the changes analyses. The dependent variable, *DIFFRATING*, is an ordinal variable equal to the change in credit ratings from year t to $t+1$, with a positive *DIFFRATING* indicating an upgrade. Consistent with the results in Table 4, the coefficient on the first-differenced *PROCEEDS* and *TAX* (i.e., *DIFFPROCEEDS* and *DIFFTAX*) are significantly positive and the coefficients on the first-differenced *OUTFLOW* and *OPTIONVALUE* (i.e., *DIFFOUTFLOW* and *DIFFOPTIONVALUE*) are significantly negative. In addition, the coefficients on *REPUR* × *DIFFOUTFLOW* and *REPUR* × *DIFFOPTIONVALUE* are also negative at conventional levels. Furthermore, untabulated results show that the change in credit ratings does not explain the one-year-ahead change in *OPTIONVALUE*, suggesting that the direction of causality runs from *OPTIONVALUE* to *RATINGS*.

Effect of ESOs on Credit Ratings for Speculative Grade Debt Issuers

In the primary analyses, I use past repurchase intensity as a predictor of future repurchase possibility and find that the after-tax fair value of outstanding ESOs has a more adverse impact on credit ratings for firms with greater past repurchase intensity. If the negative relation between ESOs and credit ratings indeed derives from the potential ESO-motivated repurchases, *OPTIONVALUE* should exhibits a less negative effect on *RATING* for firms in which future share repurchases are less likely to happen.

Firms with speculative-grade ratings face greater difficulty in accessing external debt markets because of their risky credit profile. Any further downgrade in credit ratings might keep them out of debt markets completely. As a result, these firms should be less willing to absorb the cost of the credit rating cut and therefore are less likely to engage in activities that will impair their credit ratings, such as ESO-motivated share repurchases. This suggests that speculative grade debt issuers provide an alternative way to measure future repurchase possibility.

To identify speculative grade debt issuers, I create an indicator variable, *SPEC_ISSUER*, set equal to 1 if the firm has a speculative grade rating and raised new debt over the past three years,

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[26] My results are robust to the use of the Rivers and Vuong (1988) procedure as an alternative method of addressing the endogeneity of *OPTIONVALUE* and *REPUR*. The Rivers-Vuong results show that the coefficients on *OPTIONVALUE* and *REPUR* × *OPTIONVALUE* are both significantly negative (results available on request).

TABLE 8

Ordered Probit Results of the Changes Specification (Dependent Variable = *DIFFRATING*)

Independent Variable	Predicted Sign	Model (1) Coefficient (t-statistic)	Model (2) Coefficient (t-statistic)
Control Variables			
DIFFSTDROA	−	−1.322	−1.610
		(0.42)	(0.52)
DIFFRET (÷10^2)	?	−0.212	−0.210
		(1.43)	(1.36)
DIFFCASH	?	−0.366	−0.296
		(0.31)	(0.24)
DIFFFOCF	+	1.329*	1.424*
		(1.66)	(1.75)
DIFFLEVERAGE	−	−0.778	−0.708
		(0.67)	(0.61)
DIFFROA	+	0.093	0.115
		(0.11)	(0.14)
DIFFLOSS	−	−0.214	−0.209
		(0.94)	(0.92)
DIFFINT_COV (÷10^2)	+	−0.202	−0.249
		(1.01)	(1.25)
DIFFSIZE	+	0.890***	0.885***
		(2.82)	(3.29)
DIFFSUBORD	−	0.011	0.022
		(0.06)	(0.11)
DIFFCAP_INTEN	+	0.069	0.017
		(0.50)	(0.02)
Hypothesized Variables			
DIFFPROCEEDS	+	17.379*	
		(1.69)	
DIFFTAX	+	24.271**	
		(2.43)	
DIFFOUTFLOW	−	−17.978***	
		(2.91)	
DIFFOPTIONVALUE	−		−17.501***
			(2.78)
REPUR	?	−3.324**	−3.547*
		(2.52)	(2.56)
*REPUR * DIFFOUTFLOW*	−	−16.127***	
		(2.55)	

(continued on next page)

TABLE 8 (continued)

Independent Variable	Predicted Sign	Model (1) Coefficient (t-statistic)	Model (2) Coefficient (t-statistic)
*REPUR**	−		−17.279*
DIFFOPTIONVALUE			(1.94)
Industry dummies		Yes	Yes
Sample size		650	650
Pseudo R^2		0.1294	0.1259

*,**,*** Significant at the 0.1, 0.05 and 0.01 levels, respectively (two-tailed). Robust standard errors that allow heteroscedasticity and dependence for observations of the same firm (cluster) are used to calculate t-statistics.

DIFFRATING is an ordinal variable set equal to the one-year-ahead change in *RATING*, with a positive value indicating a rating upgrade. *DIFF_Y* is the change in the variable *Y* from year *t*–1 to *t*, where *Y* is one of the variables in the credit-rating model.

and 0 otherwise. I interact *SPEC_ISSUER* with *OUTFLOW* and *OPTIONVALUE* and expect the coefficients on these interaction terms to be positive. Consistent with my expectation, Table 9 shows that the coefficients on *OUTFLOW* and *OPTIONVALUE* are significantly negative while the coefficients on *SPEC_ISSUER* × *OUTFLOW* and *SPEC_ISSUER* × *OPTIONVALUE* are significantly positive, providing confirming evidence that the likelihood of future share repurchases contributes to the unfavorable effect of outstanding ESOs on credit ratings.[27]

Controlling for the Sensitivity of CEO Wealth to Stock Price and Stock Return Volatility

Daniel et al. (2004) find that the sensitivity of CEO wealth to stock price (delta) and the sensitivity of CEO wealth to stock volatility (vega) are both positively associated with bond credit spreads. They attribute their finding to the greater risk-taking behavior motivated by the CEO's delta and vega incentives (e.g., Coles et al. 2006). To the extent that CEOs' option holdings are positively correlated with outstanding ESOs, the negative association between outstanding ESOs and the credit quality could reflect the risk premium charged by the credit market for higher delta and vega embedded in the managerial compensation scheme. To investigate this alternative explanation, I include in the credit-rating model the CEO's delta and vega incentives. *DELTA* is defined as the change in the dollar value of the executives' wealth for a 1 percent change in stock price. *VEGA* is defined as the Black-Scholes partial derivative of the option value with respect to a 1

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[27] If ESO-related repurchases affect credit risk, then one would expect debt contracts to control for this risk. To investigate this possibility, I used 10-K Wizard to obtain all credit agreements entered into during the 2001–2003 period for my sample firms. Forty-two out of the 63 firms for which I was able to locate their credit agreements have some types of the restricted payment covenants that impose an upper bound for the aggregate amount of all restricted payments that the company can make. Restricted payments generally include dividends, share repurchases, and other distributions (whether in cash, securities, or other property). Interestingly, eight out of the 42 agreements that contain a restricted payment covenant actually specify the maximum dollar amount that the company can pay to repurchase or retire its capital stock in connection with a compensation or stock option plan. Moreover, *OPTIONVALUE* has a less negative effect on *RATING* for the eight firms (21 firm-years) that are subject to a maximum ESO-related repurchase restriction although the adverse effect of ESOs for 42 firms (113 firm years) with restricted payment covenants is not statistically different from that of the rest of the sample. Excluding these 42 firms does not affect the tenor of my results.

TABLE 9

Probit Analysis of the Effect of Outstanding Employee Stock Options on Credit Ratings for Speculative Grade Debt Issuer (Dependent Variable = *RATING*)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)
Control Variables			
STDROA	−	−3.833***	−3.937**
		(2.27)	(2.35)
RET (÷10^2)	?	−0.557***	−0.549***
		(5.30)	(5.49)
CASH	?	−1.103	−1.039
		(1.55)	(1.48)
FOCF	+	2.905***	3.273***
		(3.11)	(3.44)
LEVERAGE	−	−1.311**	1.246**
		(2.45)	(2.36)
ROA	+	4.020***	4.222***
		(4.25)	(4.45)
LOSS	−	−0.151	−0.163
		(0.72)	(0.75)
INT_COV (÷10^2)	+	0.337	0.443*
		(1.22)	(1.68)
SIZE	+	0.691***	0.693***
		(9.21)	(9.24)
SUBORD	−	−0.159	−0.192
		(0.94)	(1.12)
CAP_INTEN	+	0.164	0.163
		(0.64)	(0.64)
Hypothesized Variables			
PROCEEDS	+	12.205***	
		(3.67)	
TAXSAVINGS	+	8.135	
		(1.53)	
OUTFLOW	−	−8.845***	
		(4.15)	
OPTIONVALUE	−		−6.906***
			(3.61)
SPEC_ISSUER	−	−3.381***	−3.345***
		(8.78)	(9.09)
SPEC_ISSUER × *OUTFLOW*	+	1.864**	
		(1.98)	

(continued on next page)

TABLE 9 (continued)

Independent Variables	Predicted Sign	Coefficient (t-statistic) Model (1)	Coefficient (t-statistic) Model (2)
SPEC_ISSUER×	+		3.149*
OPTIONVALUE			(1.70)
Industry dummies		Yes	Yes
Sample size		990	990
Pseudo R^2		0.4894	0.4838

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*,**,*** Significant at the 0.1, 0.05 and 0.01 levels, respectively (two-tailed). Robust standard errors that allow heteroscedasticity and dependence for observations of the same firm (cluster) are used to calculate t-statistics.

SPEC_ISSUER is an indicator variable set equal to 1 if the firm has a speculative grade rating and raised new debt over the past three years, and 0 otherwise.

All other variables are as defined in Table 2.

percent change in stock-return volatility and then weighted by the number of options held by the CEO. The calculations of *DELTA* and *VEGA* follow Core and Guay (2002).

Untabulated results show that while the coefficients on *VEGA* and *DELTA* are significantly negative at the 10 percent level in the ordered probit levels specification, *VEGA* and *DELTA* do not exhibit explanatory power in the changes specification. More importantly, the inclusion of these two variables does not affect the directions and significance of the hypothesized variables, suggesting that the adverse effect of ESO-related cash outflows on *RATING* cannot be attributed to CEOs' delta and vega incentives.

VII. CONCLUDING REMARKS

This paper empirically examines the effects of outstanding ESOs on the issuing company's credit quality. I hypothesize that outstanding ESOs convey two types of cash flow information relevant to credit rating assessments: (1) expected cash inflows due to equity infusion; and (2) expected cash outflows due to ESO-related share repurchases. Consistent with these hypotheses, I find that for a sample of 990 firm-year observations from 356 firms over the years 2001–2003, the expected cash proceeds and tax benefits from ESO exercise are positively associated with credit ratings, while the expected ESO-motivated repurchase outlays are negatively associated with credit ratings. The after-tax fair value of outstanding ESOs, which measures the net cash outflows associated with settling ESO obligations and buying back the underlying shares, has an adverse effect on credit ratings. The adverse effect of outstanding ESOs on credit ratings is more pronounced for firms with greater past repurchase intensity. These results hold after controlling for operating risk, stock return performance, cash on hand, and other firm characteristics that are known to predict corporate credit ratings and are robust to the use of the simultaneous equations model to account for the endogeneity of the firm's option use and share repurchase decisions.

This paper contributes to the literature in the following ways. First, I identify the nature of the cash flow information conveyed by outstanding ESOs and demonstrate that credit-rating agencies incorporate both the potential equity infusion and ESO-related repurchase outlays in their credit rating decisions. Second, this study adds to the literature that links credit risk with option-based compensation. Prior literature shows that the CEO's delta and vega incentives are both associated with higher bond credit spreads. This study contributes by demonstrating that outstanding ESOs have direct cash flow implications for the issuing company's credit quality beyond the CEO's delta and vega incentives. Going forward, future research might examine the trade-off between the benefits of managing EPS and the capital structure, against the costs of lower credit ratings. An analysis of this cost-benefit trade-off would shed light on the circumstances under which managers are willing to bear the explicit cost of lower credit ratings to conduct ESO-related share repurchases.

I caution that my results do not imply that compensating employees with ESOs in lieu of cash impairs credit quality. Rather, the evidence of this study highlights the direct cash flow information conveyed by outstanding ESOs that helps credit-rating agencies evaluate the issuing company's cash flow prospects around ESO exercise. In addition, the sample of this study was selected to increase the power of the tests by focusing on large firms and intensive ESO users. Therefore, these findings may not generalize to other sample periods or firms with limited outstanding ESOs.

APPENDIX

SIMULTANEOUS EQUATIONS ANALYSIS OF THE EFFECTS OF OUTSTANDING ESOS ON CREDIT RATINGS

The three-equation system used to address the endogeneity of *OPTIONVALUE* and *REPUR* in the "Endogeneity of *OPTIONVALUE* and *REPUR*" section is as follows:

$$\begin{aligned} RATING_{i,t} = {} & \alpha_1 PROCEEDS_{i,t} + \alpha_2 TAX_{i,t} + \alpha_3 OUTFLOW_{i,t} + \alpha_4 REPUR_{i,t} + \alpha_5 REPUR_i \\ & \times OUTFLOW_{i,t} + \alpha_6 STDROA_{i,t} \div \alpha_7 RET_{i,t} + \alpha_{11} CASH_{i,t} + \alpha_{12} FOCF_{i,t} \\ & + \alpha_{13} LEVERAGE_{i,t,} + \alpha_{14} ROA_{i,t} + \alpha_{15} LOSS_{i,t} + \alpha_{16} INT\_COV_{i,t} + \alpha_{17} SIZE_{i,t} \\ & + \alpha_{18} SUBORD_{i,t} + \alpha_{19} CAP\_INTEN_{i,t} + \alpha_{20} INDRATING_{i,t} \\ & + \varphi_K IndustryDummies_k + \varepsilon_{i,t} \end{aligned} \tag*{$(1')^{28}$}$$

$$\begin{aligned} OPTIONVALUE_{i,t} = {} & \delta_0 + \delta_1 IDRISK_{i,t} + \delta_2 RD_{i,t} + \delta_3 GROW\_EMPL_{i,t} + \delta_4 B2M_{i,t} \\ & + \delta_5 LOGSALES_{i,t} + \delta_6 CONSTRAIN_{i,t} + \delta_7 RATING_{i,t} + \delta_8 AVGROA_{i,t} \\ & + \delta_9 RET3YR_{Ii,t} + \delta_{10} INDOPTION_{i,t} + \rho_k IndustryDummies_k + \varepsilon_{i,t} \end{aligned} \tag{2}$$

$$\begin{aligned} REPUR_{it} = {} & \gamma_0 + \gamma_1 RATING_{it} + \gamma_2 ISSUE\_DEBT_{it} + \gamma_3 FOCF_{it} + \gamma_4 WACC_{it} \\ & + \gamma_5 DEV\_LEV_{it} + \gamma_6 CUMRET_{it} + \gamma_7 EXERCISED_{it} \\ & + \gamma_8 INDREPUR_{it} + \lambda_k IndustryDummies_k + \varsigma_{it} \end{aligned} \tag{3}$$

where *i*, *t*, and *k* are firm, year, and industry indexes, respectively.

INDRATING = average *RATING* of other firms in the same Fama-French 48 industry group;

IDRISK = logarithm of the standard deviation of the residual from a market model regression estimated over 36 months of returns ending with the fiscal year-end (subject to a minimum of 12 monthly returns);

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[28] Equation (1′) is the same as Equation (1) except for the inclusion of *INDRATING*. To ensure that the simultaneous equations system is identified, I include respectively the industry mean credit rating (*INDRATING*), ESO use (*INDOPTION*), and repurchase intensity (*INDREPUR*) in the *RATING*, *OPTIONVALUE*, and *REPUR* equations, so that every equation has its own predetermined variable not affected by firm-specific characteristics.

RD = three-year average of [R&D expense (Compustat #46) scaled by total assets (Compustat #6)];

$GROW\_EMPL$ = growth options per employee, calculated as [market value of equity (Compustat #25 × Compustat #199) − book value of equity (Compustat #60)]/number of employees (Compustat #29);

$B2M$ = total assets/[book value of liabilities (Compustat #181) + market value of equity)];

$LOGSALES$ = logarithm of sales (Compustat #12);

$CONSTRAIN$ = three-year average of [cash dividends (Compustat #127) + cash used in investing activities (−Compustat #311) − cash flow from operations (Compustat #308)] /total assets;

$AVGROA$ = average ROA calculated over the three-year period from year t−2 to year t, where ROA is income before extraordinary items (Compustat #18) divided by total assets;

$RET3YR$ = buy-and-hold return calculated over the three-year period from year t−2 to year t;

$INDOPTION$ = average *ESOGRANT* of other firms in the same Fama-French 48 industry group, where *ESOGRANT* is the total number of stock options granted during the year scaled by the number of outstanding shares at the end of the year; the total number of stock options granted during the year is obtained by dividing the number of individual executive option grants (ExecuComp data *NUMSECUR*) by the percent of total option grants in a given year represented by the executive option grants (ExecuComp data *PCTTOTOP*);

$ISSUE\_DEBT$ = amount of debt raised over the past three years scaled by total assets at the end of the year, where the amount of debt raised in a particular year is calculated as [increase in total debt (Compustat #9 + Compustat #34) plus reduction in long-term debt (Compustat #114)];

$WACC = COD \times DEBT / (DEBT + EQUITY) + COE \times EQUITY / (DEBT + EQUITY)]$, where COD and COE are the industry cost of debt and cost of equity, respectively, taken from Damodaran's cost of capital database;[29] $DEBT$ is the book value of debt (Compustat #9 + Compustat #34); and $EQUITY$ is the book value of equity (Compustat #60);

DEV_LEV = the firm's leverage ratio minus its target leverage ratio at the beginning of the three-year period (i.e., year t−2), where the firm's target leverage ratio is the mean leverage ratio of all firms in the same Fama-French 48 industry group. The leverage ratio is measured as total debt (Compustat #9 + Compustat #34) divided by total assets;

$EXERCISED$ = number of ESOs exercised during year t scaled by the number of outstanding shares at the end of the year; and

$INDREPUR$ = average *REPUR* of other firms in the same Fama-French 48 industry group.

The Selection of Variables for the *OPTIONVALUE* Model

Core and Guay (1999) predict that shareholders face a higher monitoring cost when there is greater uncertainty in the firm's operating environment, when the firm has greater growth opportunities, and when the firm is larger and less centralized. Consistent with Core and Guay (1999),

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[29] Available on: http://pages.stern.nyu.edu/~adamodar/.

I use the logarithm of idiosyncratic risk, *IDRISK*, as a proxy for the firm's operating uncertainty. The idiosyncratic risk is measured as the standard deviation of the market model residuals calculated using the firm's stock return data for the preceding 36 months (subject to a minimum of 12 monthly returns). I use three variables to capture the firm's growth opportunities: (1) R&D intensity (*RD*), measured as the three year average of (R&D expenditures scaled by total assets); (2) growth option per employee ($GROW\_EMPL$), measured as the difference between the market value of equity and the book value of equity divided by the number of employees; and (3) book-to-market ratio (*B2M*), calculated as the book value of assets divided by the market value of assets, where the market value of assets is approximated by the sum of the book value of liabilities and the market value of equity. Following Hanlon et al. (2003), I use the logarithm of sales (*LOGSALES*) to capture the monitoring difficulty arising from firm size. The coefficients on *IDRISK*, *RD*, $GROW\_EMPL$, and *LOGSALES* are expected to be positive and the coefficient on *B2M* is expected to be negative.

Firms facing financial constraints are likely to substitute equity-based compensation for cash pay to conserve cash. Consistent with Core and Guay (1999), I measure the degree of cash constraint, denote *CONSTRAIN*, as the three-year average of (cash dividends plus cash used in investing activities minus cash flow from operations, all deflated by total assets). I also include *RATING* in Equation (2) since firms with poor credit ratings have greater difficulty in accessing debt markets and are more likely to use ESOs in lieu of cash compensation. The coefficient on *RATING* is expected to be negative.

The fair value of an ESO increases in the value of the underlying stock, which depends on firm performance. Accordingly, I include two performance measures in the *OPTIONVALUE* model: (1) *AVGROA*, calculated as the three-year average *ROA* from year t–2 to year t, to capture the firm's accounting performance; and (2) *RET3YR*, calculated as the three-year buy-and-hold return from year t–2 to year t, to measure the firm's stock performance. The coefficients on *AVGROA* and *RET3YR* are expected to be positive.

The Selection of Variables for the *REPUR* Model

To finance share repurchases, the company must either use its internally generated funds or borrow the money outright. I use *RATING* and the amount of total debt raised over the past three years, scaled by total assets, denoted $ISSUE\_DEBT$, to proxy for the company's ability to access debt markets. Firms with better credit ratings are in a better position to raise funds to finance share repurchase programs, implying a positive coefficient on *RATING*. Similarly, firms raising more debt in recent years should have better access to debt markets and better ability to fund share repurchase programs, indicating a positive relation between *REPUR* and $ISSUE\_DEBT$. However, firms that are more active in debt markets should be more concerned about the unfavorable effect of repurchases on their costs of debt, suggesting a negative relation between *REPUR* and $ISSUE\_DEBT$. Thus, the coefficient on $ISSUE\_DEBT$ is ambiguous. I use the firm's free operating cash flow, *FOCF*, to proxy for internally generated funds that can be used to buy back shares and expect the coefficient on *FOCF* to be positive.

I include the firm's weighted average cost of capital, denoted *WACC*, to proxy for the cost of funds used to repurchase shares. *WACC* is calculated as $[COD \times DEBT / (DEBT + EQUITY) + COE \times EQUITY / (DEBT + EQUITY)]$, where *COD* and *COE* are the industry cost of debt and equity, respectively, taken from Damodaran's cost of capital database; *DEBT* is the book value of debt; *EQUITY* is the book value of equity. I expect the coefficient on *WACC* to be negative because firms should be less willing to repurchase if funds used to buy back shares are more costly. Dittmar (2000) finds that firms tend to repurchase shares when their leverage ratio is below the target leverage. Following Dittmar (2000), I include DEV_LEV, defined as the firm's leverage minus its target leverage, measured at the beginning of three-year period (i.e., year t–2).[30] The target leverage ratio is measured as the mean leverage ratio of other firms in the same Fama-French 48 industry group. I include the stock return calculated over the past three years, *RET3YR* because Stephens and Weisbach (1998) find that share repurchases are negatively associated with recent stock performance. Given that Bens et al. (2002) find that firms experiencing significant ESO exercises are more likely to repurchase shares, I also include the number of ESOs exercised during the year scaled by outstanding ESOs, denoted *EXERCISED*. Consistent with prior literature, I expect the coefficients on *DEV_LEV* and *RET3YR* to be negative and the coefficient on *EXERCISED* to be positive.

I use the cross products of the determinants of *REPUR* and the determinants of *OPTIONVALUE* to instrument *REPUR* × *OPTIONVALUE* in the *RATING* equation. Because there is no straightforward way to simultaneously estimate an equations system with one ordered probit model (*RATING*), one tobit model (*REPUR*) and one OLS model (*OPTIONVALUE*), I assume that the linear probability model (LPM) is a reasonable alternative to ordered probit and tobit models and estimate the three-equation system using the two stage least-squares method.[31]

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[30] *DEV_LEV* is determined at the beginning of the three-year period because the repurchase intensity, *REPUR*, is calculated over the past three years.

[31] Kaplan and Urwitz (1979) show that LPM performs no worse than the ordered probit model in terms of rating prediction.

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Litigation Risk, Audit Quality, and Audit Fees: Evidence from Initial Public Offerings

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ABSTRACT: We use the IPO setting to examine the relation between auditor exposure to legal liability and audit quality and audit fees. With regard to audit quality, we report robust evidence that pre-IPO audited accruals are negative and less than post-IPO audited accruals. In contrast to extant literature, our findings provide scant support for the inference that auditors acquiesce to opportunistic earnings management by issuers in an attempt to increase the offering price. With regard to audit fees, we find auditors earn higher fees for IPO engagements than post-IPO engagements. While inherent differences in auditor responsibilities between IPO audits and post-IPO audits should lead to higher fees for IPOs, a substantial portion of IPO audit fees (in levels and changes) is associated with our proxy for the auditor's 1933 Act exposure. Overall, our results suggest that both audit quality and audit fees are higher in a higher-litigation regime, consistent with the effects an increase in litigation exposure should have on auditor incentives.

Keywords: *abnormal accruals; audit committees; audit fees; audit quality; auditor litigation; earnings management; initial public offering.*

Data Availability: *The data are available from public sources identified in the paper.*

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I. INTRODUCTION

> Are the Big Four ... an endangered species, destined to die from litigation? ... the firms yearn for legal protection ... This may be a case of Catch-22. If auditors are doing a good job, they deserve to be protected from lawsuits that could put them out of business. But without the threat of such suits, will they do a good job?
>
> —Norris (2004)

As it concerns the audit profession, blame for recent accounting scandals has largely been affixed to four culprits, ranging from the alleged misdeeds of one firm to more systemic causes involving an erosion in independence, the inadequacy of self-regulation, and the diminished legal threat. During 2002, in the wake of these scandals, two major events took place: the U.S. Justice Department's indictment (and consequent demise) of Arthur Andersen and the U.S. Congress' passage of the Sarbanes-Oxley Act. Nowadays, public company management and, for the most part, their four international audit firms are more accountable under a structure of expanded duties and heightened scrutiny. To a large extent, auditors cannot serve as consultants to companies whose books they examine and a new regulator, the PCAOB, oversees auditors of SEC registrants. Therefore, in terms of likely culprits, these events address three of four, leaving untouched the diminished legal threat. Despite the introduction of legislation (Comprehensive Investor Protection Act of 2002), there has been no change to what many consider a fundamental cause for these scandals: the reduction in auditor legal liability in the mid-to-late 1990s.[1] To the contrary, in essence conceding their inability to price litigation risk, audit "firms yearn [again] for legal protection." The issue distills to whether lawmakers should decrease auditor litigation risk to protect an "endangered species," or retain/increase it to enforce a "Catch 22."

To shed light on this issue, we conduct an empirical analysis of the relations between auditor exposure to legal liability and audit quality and the pricing of litigation risk. We examine whether abnormal accruals and audit fees vary with the legal threat that auditors face. Our tests relate to auditors and their IPO clients. Because auditing a company as it transitions to public ownership spans a litigation regime change, IPOs provide something of a natural experiment to study the effect of litigation risk on audit quality and auditor fees. When companies register for their IPO they file under the Securities Act of 1933. Then, after going public, they file under the Securities Exchange Act of 1934. Because litigation risk exposure is higher under the 1933 Act than the 1934 Act, auditors should provide higher quality and receive higher fees for IPO audits.

To summarize our paper, we use pre-IPO information on Compustat and recent proxy disclosures of audit fees to construct balanced-panel data sets of newly public companies. To study the relation between litigation risk and audit quality, we examine pre-IPO audited abnormal accruals on a stand-alone basis and in contrast to post-IPO audited abnormal accruals. To study the effect of litigation risk on auditor compensation, we compare the audit fees that companies pay to go public with those they pay once they are public. We find that pre-IPO accruals are negative and less than post-IPO accruals and that auditors receive higher fees for IPO audits, a substantial portion is associated with our proxy for litigation exposure under the 1933 Act. That auditors appear more conservative and receive higher fees when auditing IPOs is consistent with the effects that an increase in litigation exposure should have on their incentives.

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[1] For example: "Enron is part of a pattern. As the liabilities faced by auditors declined in the 1990s and as the incentives auditors perceived to acquiesce in management's desire to manage earnings increased over the same period (because of opportunities to earn highly lucrative consulting revenues), there has been an apparent erosion in the quality of financial reporting. Assertive as this conclusion may sound, a burgeoning literature exists on earnings management, which indicates that earnings management is conscious, widespread and tolerated by auditors within, at least, very wide limits" (Coffee 2002); and "[b]ack in 1995, Congress enacted the Private Securities Litigation Reform Act (PSLRA), which ... reduced accountability of auditors who bless phony financial statements ... Then, in a second law, the Securities Litigation Uniform Standards Act of 1998 (SLUSA), Congress mandated that securities class-action suits be tried in federal courts. Give the devil its due: Both PSLRA and SLUSA were meant to curb abusive plaintiffs' suits. But the laws were massive overkill. In essence, they gave auditors and companies a license to steal. They have exercised that license—and then some" (Bauder 2002, C-3). See also Coffee (2004).

In examining whether litigation risk is associated with audit quality, we extend Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998) by using pre-IPO financial statements to calculate pre-IPO accruals. We calculate five measures of abnormal accruals: Jones (1991) and modified-Jones accruals (Dechow et al. 1995), using both balance sheet and statement of cash flows approaches, and discretionary current accruals (Teoh, Wong, and Rao (1998); Teoh, Welch, and Wong (1998)). In addition to standard calculations, we compute performance-matched and growth-matched versions. For all 15 measures, average pre-IPO accruals are negative. We then compare pre-IPO audited accruals to post-IPO (issue-year) audited accruals.[2] For all 15 measures, average and median pre-IPO accruals are less than post-IPO accruals. In our final test, we regress abnormal accruals on variables that proxy for performance, growth in both revenues and assets (most notably the influx of IPO proceeds), the existence of a pre-IPO audit committee and an IPO indicator variable. As with our descriptive findings, the results of these regressions provide robust evidence that pre-IPO accruals are less than post-IPO accruals.

Overall, our findings provide no support for the inference in Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998) that issuers engage in, and auditors acquiesce to, earnings management to inflate the IPO price. In contrast, consistent with higher audit quality in a higher litigation regime, our results suggest auditors are more conservative when auditing the financial statements in an IPO prospectus.

We next examine whether an increase in litigation risk is associated with an increase in audit fees. We identify those companies for which both IPO and post-IPO audit fee information is clearly available from proxy statements. We then conduct multivariate analyses of audit fees in both levels and changes. Our levels analysis documents that auditors receive higher fees for IPO audits than for post-IPO audits and confirms the positive association between IPO audit fees and IPO proceeds. The elasticity between these variables suggests that each additional $1 million in proceeds is associated with an increase in audit fees of $1,200. Our changes analysis reinforces the importance of IPO proceeds in explaining audit fees. We find that the extent of change in audit fees is *inverse* to the amount raised in the IPO. That is, the greater the IPO proceeds (an initial *increase* in assets), the greater the *decline* in audit fees from IPO audit to post-IPO audit. Because the 1933 Act establishes proceeds as an upper limit on damages, proceeds measures the maximum insurance coverage auditors provide to investors. Following this, the extent (removal) of this coverage explains IPO audit fees (the decline from IPO audit fees to post-IPO audit fees). Overall, audit fees also appear higher in a higher litigation regime.

Our findings are consistent with studies of audit production (O'Keefe et al. 1994; Bell et al. 2001) that find audit effort is increasing in partner assessments of inherent/business risk. In addition, our conversations with partners at large and small firms confirm that auditors perceive higher litigation risk, and routinely earn a higher percentage of their standard billing rates, for IPO audits. Taken together, it seems likely that the higher IPO fees we document compensate auditors for litigation risk reduction procedures involving more hours, for which they collect higher hourly rates. However, absent confidential firm data on hours and billing rates, both standard and actual, we cannot disentangle these effects (i.e., additional hours from higher rates). As with Pratt and Stice's (1994, 640) field study of Big 6 partners and managers, our findings are consistent with the view that "audit fees reflect both the amount of audit evidence collected and an additional premium to cover litigation risk ... suggesting that auditors may be charging clients to insure against future litigation losses."

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[2] Because both use an IPO company's first public, audited financial statements, the adjectives "post-IPO" accruals and "issue-year" accruals, per Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998), are synonymous.

Our paper also contributes to the literature on earnings management in IPOs by Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998), which find that issue-year (post-IPO) accruals are "unusually high" and suggest issuers opportunistically inflate earnings since "high reported earnings would translate directly into a higher offering price" (Teoh, Welch, and Wong 1998, 1938). These papers argue that constraints on issuer's incentives to manage earnings are imperfect, in particular that auditors are hamstrung with earnings management within the boundaries of GAAP. However, this argument neglects that the probability of auditor litigation is likely increasing in positive accruals (Heninger 2001) and, for IPOs, securities laws place an extra onus on auditors. Therefore, while on the one hand issuers have incentives to increase earnings; on the other hand, when conducting an IPO audit, the auditor faces an increase in litigation exposure. Our findings suggest that, in terms of pre-IPO financial statements, auditor incentives offset those of issuers.

Having said this, the shift from 1933 Act to 1934 Act is also a legal regime change for managers. As such, one could argue that, because of concerns about higher liability under the 1933 Act, managers constrain their own behavior (i.e., auditors are incidental to our results). However, while managers face more litigation risk under the 1933 Act, they also have incentives to show stronger performance because of a desire to place their securities. Whether this tension causes managers to be more or less diligent and conservative is unclear. Unless the manager's litigation concerns really dominate, and lead them to be much more diligent and conservative in preparing financial statements, it is likely the increase in auditor litigation risk under the 1933 Act causes them to be more diligent and conservative as well. Therefore, given our other findings (e.g., higher IPO audit fees), it is unlikely auditors do not influence the behavior of accruals.

Section II covers background and motivation; Section III compares base rates of auditor litigation for IPOs and 10-Ks; Section IV details samples and descriptive statistics; Sections V and VI provide the analyses of accruals and audit fees, respectively; and Section VII concludes.

II. BACKGROUND AND MOTIVATION

In this section, we discuss auditors and their responsibilities and liabilities under federal securities laws. We then review literature on the relations between legal liability and audit fees and audit quality and regarding earnings management around the time of a company's IPO.

Auditor Responsibilities and Liabilities under Federal Securities Laws

While the auditor's primary responsibility in an IPO engagement is to express an opinion on the financial statements, there are some notable differences for 1933 Act filings. For one, their responsibility for the audited financial statements does not end as of the date of their report, but extends until the effective date of the registration statement ("keeping current" requirement).[3] For another, the auditor must read the registration statement to ensure it is not in conflict with the financial statements and disclosures and that all material facts that could affect a potential investor are properly disclosed. The auditor also provides a "comfort letter" to the underwriter, who requests such letters to obtain assurance regarding information in the registration statement that is not covered by the auditor's report and for events subsequent to the audit report date.[4]

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[3] Auditors must ensure financial statements are fairly stated until the registration statement becomes "effective," which is twenty days after its initial filing or amendment (*Escott et al. v. BarChris Construction Corporation*).

[4] It is also common for auditors to review, or re-audit, prior-year financial statements in the registration statement.

In addition to these increases in auditor responsibilities, the auditor's legal exposure is higher under the 1933 Act because of the requirement to "keep current," that neither privity with the plaintiff nor their reliance on the financial statements is a necessary condition to sue, and the auditor is liable for ordinary negligence. This last reason requires an auditor to prove they acted with due diligence, whereas under the 1934 Act they must only prove they acted in good faith (i.e., not grossly negligent, fraudulent or constructively fraudulent). Overall, "section 11 diverges from Rule 10b-5 (in the plaintiff's favor) in a few ... respects ... most significantly, section 11 eliminates the scienter requirement [the plaintiff's obligation to prove an intent to injure or knowledge of the falsity of the representation] for liability, effectively rendering it a strict liability source of legal exposure for both issuers and accounting firms ... Consequently, section 11 imposes a narrow but significant source of liability risk for auditing firms engaged to certify the financial statements of firms who are going public" (Talley 2006, 1657–1658).

Auditor Litigation Risk and Audit Fees

A stream of literature, dating back over 25 years, relates audit fees with auditor exposure to losses from legal liability. Simunic (1980) models audit fees as a linear combination of the marginal cost of auditing plus expected losses from litigation. While effort increases the cost of performing the audit, it decreases expected litigation losses. This inverse relation is because, by expending more effort, auditors are more likely to detect material misstatements and satisfy audit standards, and thereby mitigate both of the conditions necessary to bring successful litigation.

Beatty (1993, 296) is the first paper to focus on the connection between litigation risk and audit fees, a relation he characterizes as "the legal liability hypothesis ... that as the expected losses from imposition of legal liability increase, the audit fee will increase, ceteris paribus." For a sample of IPOs, he reports a positive relation between non-underwriting expenses and three *ex post* measures of exposure to legal liability: delisting, bankruptcy and lawsuits. Willenborg (1999) extends this with an *ex ante* measure, showing that IPO audit fees are increasing in the amount of money the IPO raises. Because the 1933 Act sets proceeds as an upper limit on damages (i.e., the maximum coverage auditors provide to investors), Willenborg (1999) interprets this association as support that audit firms increase their fees as their insurance exposure increases. Seetharaman et al. (2002) examine audit fees paid by U.K. companies that issue equity in the U.S. They report evidence consistent with audit fees adjusting upward to reflect the increase in liability present in the U.S. for auditors of these U.K.-based companies. We also exploit differences between litigation liability regimes by comparing audit fees paid by the same company as it transitions from 1933 Act to 1934 Act liability regimes.

Auditor Litigation Risk and Audit Quality

The prediction that audit fees should reflect differences between litigation regimes has important implications for audit quality. Dye (1993) formalizes the relation between auditor liability exposure and audit quality and audit fees. In his model, the auditors' wealth acts as a bond to ensure that they perform a high-quality audit. Because of this, Dye (1993) shows that audit quality is increasing in auditor wealth and that audits are priced such that they contain a component relating to the option that financial statement users have on auditor wealth.

The relation between audit fees, audit quality and the financial statement user's claim on the auditor's wealth in the case of an audit failure motivates our paper. If audit fees are a nested function of audit quality and litigation exposure, the 1933 Act-1934 Act threshold suggests certain empirical predictions. Because of the additional liability the 1933 Act imposes on auditors, quality and fees should increase (decrease) for IPO audits (post-IPO audits).

Accounting Accruals around the Time a Company Raises Initial Equity Capital

Our use of abnormal accruals to proxy for audit quality has implications for papers that study earnings management around the time companies go public. Teoh, Welch, and Wong (1998, 1937–1938) argue, "[t]he IPO process is particularly susceptible to earnings management, offering entrepreneurs both motivation and opportunities to manage earnings ... If, as we hypothesize, investors are unable to understand fully the extent to which IPO firms engage in earnings management by borrowing from either the past or the future, *high reported earnings would translate directly into a higher offering price*" (emphasis added). Teoh, Wong, and Rao (1998, 178) argue that limitations on such earnings management are imperfect and that "sufficient flexibility may be permitted within GAAP to allow for substantial earnings management ... auditors, in turn, generally defer to management's judgment on discretionary accrual items that do not explicitly violate GAAP." While they have merit, however, these arguments do not consider that the probability the auditor is sued is likely increasing in abnormal accruals (Heninger 2001) and that auditors are held to a higher legal standard for an IPO engagement. Following Dye's (1993) connection between audit quality and an investor's claim on the auditor's wealth, the degree to which auditors accede to management's judgment should vary across the going-public threshold.

Importantly, Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998) do not examine pre-IPO financial statements. Instead, arguing issuers have incentives to continue to book income-increasing accruals in the post-IPO period, these papers compute issue-year accruals using financial statements in the first 10-K.[5] As such, issue-year accruals are a noisy measure of earnings management for the purpose of increasing the IPO offering price (nor to assess whether auditors acquiesce to such earnings management). In contrast, we use pre-IPO audited financial statements to compute pre-IPO accruals. If, as Teoh, Welch, and Wong (1998) argue, issuers manage earnings to increase the IPO price, then pre-IPO abnormal accruals should be positive. We conduct three sets tests to examine this. First, we test whether pre-IPO accruals differ from zero. Second, we test whether pre-IPO accruals are less than post-IPO accruals. For both of these, in addition to standard calculations, we compute performance- and revenue growth-matched versions of accruals. Third, we regress accruals on variables that proxy for performance, growth, governance, and an IPO indicator.

III. AUDITOR LITIGATION BASE RATES—IPOS AND 10-KS

In this section, we compare base rates of auditor litigation involving public companies, depending on whether the lawsuit relates to an IPO audit and/or a 10-K audit. While we argue that auditor legal exposure is more severe under the 1933 Act, it is also arguable that other aspects of IPOs, such as information asymmetry and accounting flexibility (e.g., APB No. 20 allows retroactive restatement of accounting choices), make it harder to find evidence of improprieties.

We start by examining every lawsuit against an audit firm involving a public company in Palmrose (1999), which provides a database of legal actions against larger auditors from 1960 to 1995.[6] We map each lawsuit to the financial statement years to which it relates, from fiscal 1960 to fiscal 1993. For 145 of the 643 companies we identify, we are unable to discern whether the lawsuit involves an IPO or a 10-K or whether it pertains to the company's financial statements. Of the remaining 498, 5 pertain solely to an IPO, 207 to both an IPO and a 10-K, and 286 to a 10-K filing. At first blush, that the number of 10-K suits exceeds that for IPOs supports the view that "[m]any more suits alleging civil liability against auditors have been brought under the Securities Exchange Act of 1934 than under the 1933 Act" (O'Reilly et al. 1998, 5–19). However, this interpretation does not consider base rates.

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[5] To the extent interim financial statements appear in a prospectus, a portion of the time period issue-year accruals cover may be under the 1933 Act's purview. However, these interim financial statements are usually not audited.

[6] Palmrose's (1999) database contains lawsuits and SEC enforcement actions against the Big 8 and their legacy firms from 1960 to 1995. As best as we can tell, the database (which Palmrose describes as "inclusive"), is not more likely to include legal action associated with IPO periods than legal action associated with non-IPO periods.

To compare the frequency of auditor litigation for IPO and 10-K engagements, we deflate these lawsuit counts by the annual number of IPOs and 10-K filings, respectively. We obtain IPO counts from Jay Ritter's website (http://bear.cba.ufl.edu/ritter/ipodata.htm). To estimate the number of 10-Ks per year, we tabulate companies with assets on Compustat and subtract recent IPOs (e.g., since Compustat shows 7,811 companies in 1988 with nonzero assets and Ritter's data indicates 227 IPOs in 1988 and 204 IPOs in 1989, the number of 10-Ks in 1988 is 7,380).

Table 1 compares annual auditor litigation base rates by whether the lawsuit pertains to an IPO and/or a 10-K. For the period from 1960 to 1993, the average annual auditor lawsuit rate for IPOs and 10-Ks is 4.00 percent and 0.31 percent, respectively; and, for 32 of these 34 years, the rate for IPO audits exceeds that for 10-K audits. If we broaden the tabulation so that we do not limit a lawsuit to one per company, then the average lawsuit rate for 10-Ks increases from 0.31 percent to 0.63 percent, and the IPO base rate is greater than the 10-K base rate for 29 of 34 years.[7] Therefore, in terms of an IPO audit, not only is the auditor's exposure to litigation higher per the federal securities laws, but they seem to be sued more often for IPO engagements *vis-à-vis* 10-K engagements.

IV. SAMPLES AND DESCRIPTIVE STATISTICS

Samples

For our analysis of audit quality, we require that we can compute five measures of abnormal accruals for pre- and post-IPO, in both standard and performance-matched versions: Jones (1991) and modified-Jones accruals (Dechow et al. 1995), using balance sheet and statement of cash flows approaches (Hribar and Collins 2002) for total accruals, and discretionary current accruals (Teoh, Wong, and Rao 1998; Teoh, Welch, and Wong 1998).[8] For our analysis of audit fees, we require that we can clearly identify audit fees for both the IPO audit and the post-IPO audit.

Because the SEC requires disclosure of the fees that registrants pay their accountant beginning with proxy statements filed on or after February 5, 2001 (SEC 2000), we start with companies that go public on or after January 1, 2000 and end with December 31, 2002. In this timeframe, we identify 454 firm-commitment IPOs on the SDC database with valid CUSIPs.

For our accruals sample, we exclude ADRs and require two years of pre-IPO data on Compustat and a prospectus on EDGAR. We can compute the ten measures of accruals for 350 of the 454 (77 percent) IPOs.[9] For our audit fees sample, we obtain the first proxy from Lexis/Nexis.[10] Of the 454 IPOs: for 32 we cannot locate a proxy, or can but it does not disclose audit fees; 10 have proxies that disclose audit fees, but combine them for IPO and post-IPO audits; 124 disclose audit fees for the post-IPO audit, but not the IPO audit;[11] 139 combine IPO audit fees with IPO

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[7] If we eliminate 1974, when the IPO litigation rate is 0.4444, we continue to reject our null beyond the 1 percent level.

[8] We also compute revenue growth-matched accruals. However, because many IPO companies are start-ups (i.e., they have zero or very low levels of revenues), we do not require that we can compute growth-matched accruals.

[9] This 23 percent sample attrition rate compares favorably to that of Teoh, Welch, and Wong (1998), which reports an initial and final sample size of 5,171 and 1,640 IPOs 1980-1992, respectively (i.e., a 68 percent sample attrition rate).

[10] Our approach differs from literature that proxies IPO audit fees using information issuers report regarding non-underwriting expenses for the issuance and distribution of the securities. Per the SEC, issuers may estimate these amounts, which combine all payments to their auditor. We obtain these amounts from SDC for 122 of our sample 142 IPOs. The correlation between our proxy-based measure of IPO audit fees and the amount per SDC is 0.88.

[11] Mean (median) post-IPO *AuditFees* for these 124 companies are $222.0 ($167.5) thousand, somewhat smaller than mean (median) $297.9 ($176.5) thousand post-IPO *AuditFees* for the 142 companies in our final sample (see Table 2).

TABLE 1

Auditor Litigation Base Rates
IPO Suits and 10-K Suits from 1960 to 1993

Year	Fraction of IPO Companies Sued with the Auditor Attached to Suit		Fraction of 10-K Companies Sued with the Auditor Attached to Suit[a]		Difference (Column 2–3)	Fraction of 10-K Companies Sued with the Auditor Attached to Suit[b]		Difference (Column 2–5)
1960	0.0037	(1/269)	0.0000	(0/738)	0.0037	0.0000	(0/738)	0.0037
1961	0.0000	(0/435)	0.0020	(2/992)	−0.0020	0.0020	(2/992)	−0.0020
1962	0.0000	(0/298)	0.0000	(0/1562)	0.0000	0.0006	(1/1562)	−0.0006
1963	0.0120	(1/83)	0.0005	(1/2001)	0.0115	0.0010	(2/2001)	0.0110
1964	0.0412	(4/97)	0.0022	(4/1846)	0.0391	0.0027	(5/1846)	0.0385
1965	0.0137	(2/146)	0.0009	(2/2288)	0.0128	0.0017	(4/2288)	0.0120
1966	0.0476	(4/84)	0.0004	(1/2500)	0.0472	0.0004	(1/2500)	0.0472
1967	0.0500	(5/100)	0.0021	(5/2361)	0.0479	0.0021	(5/2361)	0.0479
1968	0.0462	(17/368)	0.0046	(10/2183)	0.0416	0.0069	(15/2183)	0.0393
1969	0.0115	(9/781)	0.0067	(17/2519)	0.0048	0.0111	(28/2519)	0.0004
1970	0.0223	(8/358)	0.0084	(25/2986)	0.0140	0.0141	(42/2986)	0.0083
1971	0.0205	(8/391)	0.0058	(17/2920)	0.0146	0.0154	(45/2920)	0.0050
1972	0.0053	(3/562)	0.0067	(23/3419)	−0.0014	0.0146	(50/3419)	−0.0093
1973	0.0286	(3/105)	0.0039	(16/4053)	0.0246	0.0106	(43/4053)	0.0180
1974	0.4444	(4/9)	0.0013	(8/6065)	0.4431	0.0053	(32/6065)	0.4392
1975	0.0714	(1/14)	0.0023	(14/6192)	0.0692	0.0042	(26/6192)	0.0672
1976	0.0286	(1/35)	0.0006	(4/6241)	0.0279	0.0021	(13/6241)	0.0265
1977	0.0571	(2/35)	0.0011	(7/6280)	0.0560	0.0027	(17/6280)	0.0544
1978	0.0400	(2/50)	0.0018	(11/6174)	0.0382	0.0028	(17/6174)	0.0372
1979	0.0617	(5/81)	0.0012	(7/5855)	0.0605	0.0031	(18/5855)	0.0587
1980	0.0210	(5/238)	0.0025	(14/5565)	0.0185	0.0043	(24/5565)	0.0167

(continued on next page)

TABLE 1 (continued)

Year	Fraction of IPO Companies Sued with the Auditor Attached to Suit		Fraction of 10-K Companies Sued with the Auditor Attached to Suit[a]		Difference (Column 2–3)	Fraction of 10-K Companies Sued with the Auditor Attached to Suit[b]		Difference (Column 2–5)
1981	0.0089	(4/450)	0.0037	(21/5659)	0.0052	0.0071	(40/5659)	0.0018
1982	0.0991	(23/232)	0.0031	(17/5448)	0.0960	0.0079	(43/5448)	0.0912
1983	0.0135	(12/886)	0.0082	(34/4138)	0.0053	0.0150	(62/4138)	−0.0014
1984	0.0236	(13/552)	0.0034	(20/5908)	0.0202	0.0073	(43/5908)	0.0163
1985	0.0296	(15/507)	0.0060	(35/5835)	0.0236	0.0103	(60/5835)	0.0193
1986	0.0157	(15/953)	0.0042	(26/6143)	0.0115	0.0103	(63/6143)	0.0055
1987	0.0127	(8/630)	0.0046	(32/7011)	0.0081	0.0100	(70/7011)	0.0027
1988	0.0308	(7/227)	0.0035	(26/7380)	0.0273	0.0085	(63/7380)	0.0223
1989	0.0539	(11/204)	0.0037	(27/7263)	0.0502	0.0076	(55/7263)	0.0463
1990	0.0116	(2/172)	0.0032	(23/7099)	0.0084	0.0073	(52/7099)	0.0043
1991	0.0054	(2/367)	0.0023	(16/6917)	0.0031	0.0056	(39/6917)	−0.0002
1992	0.0177	(9/509)	0.0017	(12/7027)	0.0160	0.0048	(34/7027)	0.0128
1993	0.0096	(6/627)	0.0018	(16/8657)	0.0077	0.0040	(35/8657)	0.0055
Average	0.0400		0.0031		0.0369	0.0063		0.0337
(t-statistic)					(2.85)*			(2.60)*

* Significant beyond the 1% level (two-sided test).

[a] Limits lawsuits to one observation per company.

[b] Does not limit lawsuits to one observation per company.

Lawsuit data from Palmrose (1999), IPO counts from Jay Ritter's website (http://bear.cba.ufl.edu/ritter/ipodata.htm) and counts of 10-K filings from Compustat (with adjustment each year for new IPOs). Lawsuit counts for IPO companies are 5 that pertain solely to the IPO audit and 207 that pertain to both the IPO audit and a subsequent 10-K audit. Lawsuit counts for 10-K companies are the 207 that pertain to both the IPO audit and a subsequent 10-K audit and another 286 that pertain solely to a 10-K audit.

non-audit fees.[12] Of the remaining 149 IPOs, Compustat data is missing for covariates for seven IPOs. As such, 142 IPOs comprise the sample for our audit fees analysis.[13]

Descriptive Statistics

Panel A of Table 2 details the industry composition of the accruals sample. The most common SIC is 73, which when we combine with SIC 35 comprises 35.7 percent of the sample. These two SICs are also the most common for Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998), though they comprise just 23.7 percent and 22.3 percent, respectively.[14] Mostly because of this, SICs 28 to 80 comprise 78.2 percent of our sample, versus 55.4 percent and 53.6 percent for Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998), respectively. In addition, 22.6 percent (79 of 350) report annual revenues of less than $1 million for any of the three years around the IPO (*StartUp*) and 23.7 percent (83 of 350) are *Internet* companies, per a listing available on Jay Ritter's website (http://bear.cba.ufl.edu/ritter/ipodata.htm).

Panel A of Table 2 also provides financial statement and prospectus data for three years, the first two of which pertain to pre-IPO financial statements and the last to the first post-IPO financial statement. Companies in the accruals sample exhibit substantial growth in both assets and revenues prior to going public. Median assets and revenues increase from pre-IPO year $t-2$ to pre-IPO year $t-1$ from $16.8 million to S36.1 million and from $10.9 million to $21.7 million, respectively. From pre-IPO year $t-1$ to post-IPO year t, revenues continue to grow at this pace, to a median $49.6 million. Largely due to the influx of proceeds, assets increase even more so as of post-IPO year t, to a median $128.8 million. As for the growth in assets, mean (median) *AssetGrowth* increases from 3.006 to 4.031 (0.575 to 1.922) from pre-IPO year $t-1$ to post-IPO year t. Computing growth in revenues is less straightforward because many companies have very low or zero revenues. As Panel A shows, 21.7 percent, 10.6 percent, and 4.0 percent report annual *Revenues* of less than $1 million for pre-IPO year $t-2$, pre-IPO year $t-1$ and post-IPO year t, respectively. Because of this, we ignore *StartUps*, *RevenueGrowth* relates to IPOs by established companies, which exhibit mean (median) growth of 117.1 percent (52.3 percent) and 110.7 percent (63.1 percent) during pre-IPO $t-1$ and post-IPO year t, respectively. Both mean and median *ROA* are negative for all three years, though the trend is upward.[15] In addition, for over three-fourths (78.6 percent) of the accruals sample, the prospectus refers to individuals as members of an audit committee.[16]

Panel B of Table 2 presents descriptive statistics for our analysis of audit fees. Because we cannot apportion the IPO audit fee between the two pre-IPO financial statements, Panel B provides information for just pre-IPO year $t-1$. Audit fees are higher for IPO than for post-IPO audits. However, because IPOs entail additional responsibilities, the magnitude of the difference in audit fees from pre-IPO year $t-1$ and post-IPO year t should not be taken as evidence that audit fees are increasing in auditor litigation exposure. Panel B provides information on the covariates in the

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[12] To ensure that we do not bias our findings toward higher fees for IPOs, we only include firms in our sample when we can clearly identify the amount of the IPO audit fee. Many of the 139 firms we exclude disclose auditing, consulting and tax advisory fees for the IPO, but do so by grouping them together as IPO-related accounting fees.

[13] Of these 142 IPOs, we can compute all five measures of abnormal accruals for 109. If we restrict our analyses to these 109 IPOs, the results continue to support the inferences we make in the paper.

[14] Teoh, Welch, and Wong (1998) and Teoh, Wong, and Rao (1998) combine SIC 73 with SIC 35.

[15] 244 IPOs occur in 2000, of which 80.7 percent report negative Net Income for the most-recent Income Statement in their prospectus—similar to the 80.3 percent of 2000 IPOs Ljungqvist and Wilhelm (2003) report having negative pre-IPO EPS. 57 IPOs are in 2001 and 49 IPOs are in 2002; of which 57.9 percent and 46.9 percent report negative Net Income for their most-recent Income Statement, respectively-again similar to Ljungqvist and Wilhelm (2003) for 1996-1998 IPOs.

[16] The "Management" section often states certain directors serve on an audit committee of the Board of Directors.

TABLE 2
Descriptive Statistics
Accruals and Audit Fees Samples

Panel A: Accruals Sample[a]

SIC	Industry	2000	2001	2002	Total		*StartUp*	*Internet*
28	Chemicals and allied products	31	3	5	39	(11.1%)	19	0
35	Machinery and computer equipment	15	6	0	21	(6.0%)	5	4
36	Electronic equipment	45	5	1	51	(14.6%)	12	7
38	Scientific instruments	25	7	7	39	(11.1%)	10	1
48	Communications	11	0	1	12	(3.4%)	1	2
73	Business services	85	9	10	104	(29.7%)	23	61
80	Health services	4	3	1	8	(2.3%)	0	0
87	Professional services	13	3	2	18	(5.2%)	6	2
	Other	15	21	22	58	(16.6%)	3	6
		244	57	49	350	(100.0%)	79	83

Variable		Pre-IPO Year $t-2$	Pre-IPO Year $t-1$	Post-IPO Year t
Assets	mean	299.281	420.816	577.315
($millions)	median	16.843	36.100	128.778
	standard deviation	1,753.068	2,901.333	3,123.820
AssetGrowth	mean	NA	3.006	4.031
	median		0.575	1.922
	standard deviation		9.936	7.524
Revenues	mean	307.458	345.828	436.454
($millions)	median	10.880	21.721	49.636

(continued on next page)

TABLE 2 (continued)

Variable		Pre-IPO Year $t-2$	Pre-IPO Year $t-1$	Post-IPO Year t
	standard deviation	1,696.613	1,740.553	2,147.260
	% < \$1 million	21.7%	10.6%	4.0%
RevenueGrowth	mean	NA	1.171	1.107
	median		0.523	0.631
	standard deviation		2.346	2.049
ROA	mean	−0.558	−0.392	−0.169
	median	−0.298	−0.259	−0.099
	standard deviation	1.135	0.685	0.333
AuditCommittee	mean	NA	0.786	1.000

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TABLE 2 (continued)

Panel B: Audit Fees Sample[b]

SIC	Industry	2000	2001	2002	Total		*LitRisk*	*Internet*
28	Chemicals and allied products	14	3	4	21	(14.8%)	20	0
35	Machinery and computer equipment	4	3	0	7	(5.0%)	6	4
36	Electronic equipment	11	4	1	16	(11.3%)	14	0
38	Scientific instruments	7	5	2	14	(9.9%)	0	0
48	Communications	3	0	0	3	(2.1%)	0	0
73	Business services	19	6	8	33	(23.2%)	33	19
80	Health services	4	4	0	8	(5.6%)	0	0
87	Professional services	4	3	1	8	(5.6%)	0	0
	Other	4	12	16	32	(22.5%)	8	3
		70	40	32	142	(100.0%)	81	26

Variable		**Pre-IPO Year *t*–1**	**Post-IPO Year *t***
AuditFees	mean	612.240	297.937
(*$thousands*)	median	413.100	176.500
	standard deviation	713.768	382.590
Assets	mean	871.175	970.508
($millions)	median	40.620	129.825
	standard deviation	4,631.590	4,133.080
InvRec	mean	0.249	0.169
	median	0.186	0.118

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TABLE 2 (continued)

Variable		Pre-IPO Year t–1	Post-IPO Year t
	standard deviation	0.223	0.171
Leverage	mean	0.251	0.090
	median	0.106	0.005
	standard deviation	0.383	0.179
ROA	mean	−0.489	−0.159
	median	−0.180	−0.063
	standard deviation	0.920	0.391
Loss	mean	0.711	0.648
LitRisk	mean	0.570	0.570
Big5	mean	0.958	0.958
AuditCommittee	mean	0.704	NA
New/n>1Auditor	mean	0.261	NA
S-1	mean	0.930	NA
Amendments	mean	4.923	NA
	median	5.000	
	standard deviation	2.067	
Proceeds	mean	182.349	NA
($millions)	median	70.950	
	standard deviation	490.462	

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[a] Observations are 350 (of 454) IPOs during 2000–2002 with necessary data and a prospectus on EDGAR. Of these, we classify 79 as *StartUp* because annual *Revenues* are less than $1 million for pre-IPO year t–2, pre-IPO year t–1 or post-IPO year t and 83 as *Internet* IPOs per Jay Ritter's website (http://bear.cba.ufl.edu/ritter/ipodata.htm). Because it is impossible or impractical, *RevenueGrowth* pertains to the 271 companies we do not classify as *Startup*.

(continued on next page)

TABLE 2 (continued)

[b] Observations are 142 (of 454) IPOs during 2000–2002 that clearly report audit fees for both the IPO and the first post-IPO engagements and with necessary data. *Internet* IPOs are per (http://bear.cba.ufl.edu/ritter/ipodata.htm).

Variable definitions:

Assets = total assets ($ millions), Compustat #6;
AssetGrowth = total assets (current year) – total assets (prior year)/total assets (prior year);
Revenues = total revenues ($ millions), Compustat #12;
RevenueGrowth = total revenues (current year) – total revenues (prior year)/total revenues (prior year);
ROA = net income/total assets, Compustat #172/Compustat #6;
AuditCommittee = pre-IPO, 1 if prospectus refers to existence of an audit committee, and 0 otherwise; post-IPO, equals 1 for all observations;
AuditFees = audit fees ($ thousands);
InvRec = (inventory + receivables) / total assets, (Compustat #2 + Compustat#3) / Compustat #6;
Leverage = long-term debt/total assets, Compustat #9/Compustat #6;
Loss = 1 if net income is negative, and 0 otherwise;
LitRisk = 1 if firm's primary SIC is within 2833–2836, 3570–3577, 3600–3674, 5200–5961, or 7370–7374, and 0 otherwise (Francis et al. 1994);
Big5 = 1 if a Big 5 audit firm, and 0 otherwise;
New / n > 1*Auditors* = 1 if prospectus either discloses a change in the registrant's auditor or mentions more than one auditor in the "Experts" section, and 0 otherwise;
S-1 = 1 if issuer files an S-1 SEC registration statement, and 0 otherwise;
Amendments = number of SEC registration statement amendments that IPO issuer files; and
Proceeds = gross IPO proceeds ($ millions).

audit fee analysis. The increase in assets from pre- to post-IPO corresponds with the influx of proceeds. As of post-IPO year *t*, companies have less debt and sustain smaller losses. More than one-quarter (26.1 percent) disclose either a change in auditor or more than one auditor.[17]

V. ABNORMAL ACCRUALS—PRE-IPO AND POST-IPO

Univariate Analysis

We first test if pre-IPO audited accruals differ from zero. If auditor (issuer) incentives dominate issuer (auditor) incentives, then pre-IPO audited accruals should be negative (positive). If neither dominates, then pre-IPO audited accruals should not differ from zero.[18]

We next test whether performance-matched pre-IPO audited abnormal accruals differ from zero. We follow Francis et al.'s (2005) portfolio-matching approach to address the bias that performance likely imparts on abnormal accruals. We sort companies in each two-digit SIC using lagged ROA and, for each industry, identify the median abnormal accrual in each quintile. To obtain the performance-adjusted abnormal accrual, we subtract the median abnormal accrual of the relevant quintile from the IPO's abnormal accrual.[19]

Our next test is similar to the above, but instead of matching on lagged ROA we match on revenue growth. As Panel A of Table 2 shows, our sample companies exhibit high levels of revenue growth, which likely affects accruals. To address the bias that revenue growth may have on abnormal accruals, we compute revenue growth-matched accruals.[20]

The first three columns of Table 3 relate to these tests. For all 15 measures, mean pre-IPO accruals are negative. Overall, these results provide no support for the inference that the average issuer engages in income-increasing management of pre-IPO audited earnings.

Our final test compares pre-IPO and post-IPO abnormal accruals for each of these 15 measures of accruals. Per columns seven, eight, and nine of Table 3, the results show that mean and median pre-IPO abnormal accruals are also significantly less than post-IPO accruals.

Multivariate Analysis

To assess the robustness of our final univariate test, we specify a regression to contrast pre-IPO and post-IPO audited abnormal accruals. Following Kothari et al. (2005), we specify prior-year *ROA* to control for the effect of company performance. By definition, IPOs receive a large inflow of cash, which they could use for working capital (e.g., extend credit or build inventory). Because accruals would tend to be high for such companies, it would not be surprising to find an increase in their accruals after the IPO, even with no earnings management in any year.[21]

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[17] Of our sample, 14 percent report a change in auditors prior to their IPO and 21 percent refer to more than one auditor in their prospectus. Because their correlation is 0.44, we combine these two to specify *New / n > 1Auditors.*

[18] Because of the increase in assets that accompany going public, deflating accruals by lagged assets results in many values that exceed 100 percent, we deflate by average assets. However, whether we deflate by average assets or lagged assets does not affect on our inferences. We also control for asset growth in our Equation (1) regressions.

[19] Our results are similar if we adopt Kothari et al.'s (2005) procedure, though it leads to several observations with an absolute value of abnormal accruals (even after deflating by average assets) that exceed 100 percent.

[20] We adopt an analogous approach to the one we discuss in the text, but instead sort by the change in annual revenues. We are unable to compute growth-matched accruals for 32 observations (see third and sixth columns of Table 3), primarily because these companies have very low revenues, which preclude identifying a suitable match.

[21] We note that neither extant literature (e.g., Rock 1986; Pagano et al. 1998; Brau and Fawcett 2006; Leone et al. 2007) nor our sample provide support for the claim that IPO companies suffer from sub-optimal working capital levels, and either go public or use the IPO proceeds to relieve this constraint.

TABLE 3

Accruals
Pre-IPO and Post-IPO Time Periods

		Pre-IPO Year t–1			Post-IPO Year t			Test of Differences: Pre-versus Post-IPO Years		
Accruals Measure		Accruals	Performance Matched Accruals	Growth Matched Accruals	Accruals	Performance Matched Accruals	Growth Matched Accruals	Accruals	Performance Matched Accruals	Growth Matched Accruals
$Jones_{BS}$	mean	−0.062*	−0.032*	−0.051*	0.002	0.038*	0.018**	t = −5.94*	t = −6.27*	t = −5.98*
	median	−0.033*	−0.012***	−0.029*	−0.001	0.037*	0.012**	z = −5.89*	z = −6.43*	z = −6.22*
	% < 0	64.0	54.6	60.7	50.9	34.0	43.4	z = 3.09*	z = 4.81*	z = 4.02*
$ModifiedJones_{BS}$	mean	−0.051*	−0.023**	−0.045*	0.010	0.045*	0.022*	t = −5.51*	t = −6.03*	t = −5.65*
	median	−0.027*	−0.007	−0.024*	0.002	0.042*	0.012*	z = −5.56*	z = −6.35*	z = −5.92*
	% < 0	61.7	53.4	59.7	49.1	31.4	42.5	z = 2.94*	z = 5.17*	z = 4.02*
$Jones_{SCF}$	mean	−0.117*	−0.066*	−0.109*	−0.045*	0.039*	−0.022***	t = −4.22*	t = −5.89*	t = −5.18*
	median	−0.047*	−0.016***	−0.045*	−0.024*	0.030*	−0.019**	z = −4.97*	z = −7.17*	z = −5.22*
	% < 0	62.9	54.9	62.3	58.0	41.1	56.3	z = 1.15	z = 3.19*	z = 1.41
$ModifiedJones_{SCF}$	mean	−0.109*	−0.059*	−0.105*	−0.038*	0.046*	−0.023***	t = −4.15*	t = −5.95*	t = −4.95*
	median	−0.038*	−0.012	−0.040*	−0.016**	0.040*	−0.016**	z = −4.91*	z = −7.18*	z = −4.94*
	% < 0	60.9	54.0	61.6	55.4	39.4	56.6	z = 1.28	z = 3.39*	z = 1.19
DCA	mean	−0.058*	−0.038*	−0.048*	0.001	0.022*	0.011**	t = −5.51*	t = −5.70*	t = −5.48*
	median	−0.031*	−0.021*	−0.028*	0.001	0.021*	0.008**	z = −5.16*	z = −6.64*	z = −5.23*
	% < 0	66.4	59.5	62.8	49.9	40.4	46.8	z = 3.11*	z = 3.57*	z = 3.93*
Observations		350	350	318	350	350	318			

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*, **, *** Significant beyond the 1%, 5% and 10% levels, respectively (two-sided tests).

Observations are 350 (of 454) IPOs during 2000–2002 with necessary data and a prospectus on EDGAR. Tests of means (medians) is a t-test (one-sample Sign test), of differences

(continued on next page)

TABLE 3 (continued)

in means (medians) is a paired t-test (Wilcoxon signed rank test) and of change in proportions is a Z-test. Performance-matched (growth-matched) accruals are minus those for the company, in the same year and industry, with the closest lagged *ROA* (*RevenueGrowth*). For growth matching, we are unable to identify a match for 32 companies, 31 of which have *Revenues* less than $1 million for either pre-IPO year *t*–2, pre-IPO *t*–1 or post-IPO year *t*.

Variables definitions:

$Jones_{BS\ or\ SCF}$ = residuals from estimating: $Accruals_{BS\ or\ SCFi,t} = \alpha_0 + \alpha_1 \Delta Revenues_{i,t} + \alpha_2 PPE_{i,t} + \varepsilon_{i,t}$;

$ModifiedJones_{BS\ or\ SCF}$ = residuals from estimating: $Accruals_{BS\ or\ SCF_{i,t}} = \alpha_0 + \alpha_1(\Delta Revenues - \Delta AR)_{i,t} + \alpha_2 PPE_{i,t} + \varepsilon_{i,t}$;

where:

$Accruals_{BS}$ = change in non-cash current assets (Compustat #4 – Compustat #1) minus the change in non-LTD current liabilities (Compustat #5) minus depreciation expense (Compustat #14)/average assets (Compustat #6);

$Accruals_{SCF}$ = earnings before extraordinary items and discontinued operations (Compustat #123) minus operating cash flows from continuing operations (Compustat #308 – Compustat #124)/average assets (Compustat #6);

$\Delta Revenues$ = change in annual revenues (Compustat #12)/average assets (Compustat #6);

PPE = net property, plant, and equipment (Compustat #8)/average assets (Compustat #6);

ΔAR = change in accounts receivable (Compustat #2)/average assets (Compustat #6); and

DCA = total current accruals minus non-discretionary current accruals. Total current accruals are the change in non-cash current assets minus the change in non-LTD current liabilities/prior year assets. Non-discretionary current accruals are as described in (Teoh, Welch, and Wong 1998, Appendix A 1966).

To consider this, we control for the change in assets (*AssetGrowth*).[22] To control for revenue growth we include *StartUp* and, for established companies, we specify the change in annual revenues (*RevenueGrowth*). Last, we specify *AuditCommittee* to consider the association between corporate governance and accounting accruals.

We estimate Equation (1), for each of the five measures of abnormal accruals in Table 3.

$$\begin{aligned} AbnormalAccruals_{i,t} = {} & \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 AssetGrowth_{i,t} + \beta_3 StartUp_{i,t} \\ & + \beta_4 RevenueGrowth_{i,t} + \beta_5 AuditCommittee_{i,t} \\ & + \beta_6 IPO_{i,t} + \varepsilon_{i,t} \end{aligned} \qquad \text{(1a-1e)}$$

where:

AbnormalAccruals = Jones accruals (1991); modified-Jones accruals (Dechow et al. 1995), using both balance sheet and statement of cash flows approaches to obtain total accruals, or discretionary current accruals (Teoh, Welch, and Wong 1998);
ROA = net income/total assets;
AssetGrowth = total assets (current year) – total assets (prior year)/total assets (prior year);
StartUp = 1 if annual revenues are less than $1 million for either pre-IPO year *t*–2, pre-IPO year *t*–1 or post-IPO year *t*, and 0 otherwise;
RevenueGrowth = total revenues (current year) – total revenues (prior year)/total revenues (prior year) if *StartUp* equals 0, and otherwise 0 (i.e., if *StartUp* equals 1);
AuditCommittee = pre-IPO, 1 if prospectus refers to existence of an audit committee, and 0 otherwise; post-IPO, equals 1 for all observations; and
IPO = 1 if the pre-IPO year t–1 time period, and 0 otherwise

Table 4 presents the results. Most covariates have their expected sign. *ROA*'s coefficient is positive for all estimations, *StartUp*'s is negative for the Equations (1c) and (1d) estimations and *AuditCommittee*'s is negative for the Equations (1c) and (1d) estimations.[23] Consistent with Table 3, *IPO*'s coefficient is negative and significant (beyond 1 percent) for all estimations.[24]

Overall, these results do not support the inference that auditors acquiesce to income-increasing earnings management to increase the offer price. Instead, they are consistent with the view that audit quality is higher in a higher litigation risk regime. While our findings that post-IPO audited accruals are "high" (versus pre-IPO audited accruals) may seem akin to those of Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998) for issue-year accruals (versus already-public companies), our inference is opposite, as we conclude that auditors afford their clients less pre-IPO discretion.[25]

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[22] We specify *AssetGrowth* because it also considers the rapid growth in assets during the pre-IPO period. Another approach is to simply control for the influx of IPO proceeds. To do this, we create a variable equal to IPO proceeds divided by beginning assets for the post-IPO period, but equal zero during the pre-IPO period. When we include this variable, in place of *AssetGrowth*, results are somewhat weaker, but similar to those we report in Table 4.

[23] Five IPOs disclose a switch from a local to a national auditor in their prospectus. Our results do not change if we exclude these observations or if we retain them and control for companies that switch auditors.

[24] We also ran the Equations (1a)–(1e) regressions after excluding *StartUp* IPOs, and again after excluding *Internet* IPOs. In both of these (untabled) cases, the coefficient on *IPO* remains significantly negative.

[25] To the extent post-IPO accruals are high, it may be because managers are aggressive after an IPO to sell their shares at a higher price when the lock-up period expires (Teoh, Welch, and Wong 1998, 1936; Brav and Gompers 2000).

TABLE 4
Abnormal Accruals Regressions

$$Jones_{BSi,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 AssetGrowth_{i,t} + \beta_3 StartUp_{i,t} + \beta_4 RevenueGrowth_{i,t} + \beta_5 AuditCommittee_{i,t} + \beta_6 IPO_{i,t} + \varepsilon_{i,t} \quad (1a)$$

$$ModifiedJones_{BSi,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 AssetGrowth_{i,t} + \beta_3 StartUp_{i,t} + \beta_4 RevenueGrowth_{i,t} + \beta 5 \beta_5 AuditCommittee_{i,t} + \beta_6 IPO_{i,t} + \varepsilon_{i,t} \quad (1b)$$

$$Jones_{SCFi,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 AssetGrowth_{i,t} + \beta_3 StartUp_{i,t} + \beta_4 RevenueGrowth_{i,t} + \beta_5 AuditCommittee_{i,t} + \beta_6 IPO_{i,t} + \varepsilon_{i,t} \quad (1c)$$

$$ModifiedJones_{SCFi,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 AssetGrowth_{i,t} + \beta_3 StartUp_{i,t} + \beta_4 RevenueGrowth_{i,t} + \beta_5 AuditCommittee_{i,t} + \beta_6 IPO_{i,t} + \varepsilon_{i,t} \quad (1d)$$

$$DCA_{i,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 AssetGrowth_{i,t} + \beta_3 StartUp_{i,t} + \beta_4 RevenueGrowth_{i,t} + \beta_5 AuditCommittee_{i,t} + \beta_6 IPO_{i,t} + \varepsilon_{i,t} \quad (1e)$$

Variable	**E[sign]**	**Equation 1a**	**Equation 1b**	**Equation 1c**	**Equation 1d**	**Equation 1e**
Constant		0.022	0.025	0.061	0.067	0.028
		(0.92)	(1.06)	(1.88)***	(2.05)**	(1.33)
ROA	+	0.043	0.042	0.090	0.088	0.035
		(2.96)*	(2.89)*	(3.94)*	(3.98)*	(2.27)**
AssetGrowth	+	0.001	0.001	0.002	0.001	0.000
		(1.34)	(1.17)	(1.20)	(1.12)	(0.16)
StartUp	−	−0.010	−0.012	−0.084	−0.086	−0.023
		(−0.62)	(−0.75)	(−2.63)*	(−2.71)*	(−1.47)
RevenueGrowth	+	0.004	0.007	0.003	0.005	0.001
		(0.87)	(1.26)	(0.58)	(0.91)	(0.22)
AuditCommittee	−	−0.009	−0.006	−0.061	−0.062	−0.009
		(−0.38)	(−0.26)	(−1.97)***	(−1.98)***	(−0.48)
IPO	−	−0.058	−0.054	−0.070	−0.069	−0.057
		(−4.67)*	(−4.28)*	(−2.83)*	(−2.81)*	(−4.85)*
Observations		700	700	700	700	700
Adjusted R^2		9.6%	9.3%	13.1%	13.1%	9.7%

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*, **, *** Significant beyond the 1%, 5% and 10% levels, respectively (two-sided tests).

Observations are 350 (of 454) IPOs during 2000–2002 with necessary data and a prospectus on EDGAR. *StartUp* equals 1 for 79 companies (158 observations) with annual *Revenues* are less than $1 million for either pre-IPO year $t-2$, pre-IPO year $t-1$ or post-IPO year t. For these companies, we code *RevenueGrowth* equal to 0; for the remaining companies, *RevenueGrowth* equals current-year *Revenues* minus prior-year *Revenues*/prior-year *Revenues*. *IPO* equals 1 if the pre-IPO year $t-1$ time period, and 0 otherwise. See Tables 2 and 3 for other variable definitions. OLS regressions and numbers in parentheses are t-statistics that, when a Breusch and Pagan (1979) test rejects beyond a 5% level, are calculated using White-adjusted standard errors (White 1980).

VI. AUDIT FEES—PRE-IPO AND POST-IPO

Audit Fee Levels

We begin by regressing the logarithm of audit fees on the logarithm of assets, the fraction of assets in inventories and receivables, leverage, profitability, and auditor type (Beatty 1993; Menon and Williams 2001). We also control for whether the issuer is an *Internet* company or in a litigious industry (Francis et al. 1994).[26] We start with Equation (2a), which we append with an indicator variable for whether the audit pertains to the IPO, in Equation (2b).

$$Ln(AuditFees)_{i,t} = \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \varepsilon_{i,t} \quad (2a)$$

$$Ln(AuditFees)_{i,t} = \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \beta_9 IPO_{i,t} + \varepsilon_{i,t} \quad (2b)$$

where:

Ln(*AuditFees*) = Ln(audit fees);
Ln(*Assets*) = Ln(total assets);
InvRec = (inventory + receivables)/total assets;
Leverage = debt/total assets;
ROA = net income/total assets;
Loss = 1 if negative Net income, and 0 otherwise;
Big5 = 1 if a Big 5 audit firm, and 0 otherwise;
Internet = 1 if an Internet IPO, and 0 otherwise;
LitRisk = 1 if SIC is 2833–2836, 3570–3577, 3600–3674, 5200–5961 or 7370–7374 (biotechnology, computers, electronics or retailing); and 0 otherwise; and
IPO = 1 if the IPO year, and 0 otherwise.

The results of estimating Equations (2a) and (2b), per columns one and two of Table 5, are generally consistent with the literature, in that audit fees increase with size and decrease with profitability.[27] Consistent with Table 2, audit fees are higher for the IPO *vis-à-vis* the post-IPO engagement and specifying the *IPO* intercept shift substantially increases the adjusted R^2.[28]

That audit fees are higher for IPOs likely relates to increases in both audit responsibilities and litigation exposure. To pursue this, we supplement Equation (2a) with five covariates. First, we include *AuditCommittee*. While we do not have a directional expectation for this variable's coefficient, we expect the other additional covariates to be positively associated with IPO audit fees. The first is whether the prospectus discloses a change in audit firm or mentions more than one audit firm (*New / n > 1Auditors*). The next two, whether the issuer files an *S-1* registration (*S-1*) and the number of amendments they file (*Ln*(*Amendments*)), proxy the extra work an IPO audit

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[26] We do not control for subsidiaries or foreign operations because these do not vary much from pre- to post-IPO. Only one company went public with a going-concern opinion, and coefficients change very little if we exclude it.

[27] While the coefficients on *Ln*(*Assets*) and regression explanatory power are low relative to audit fee regressions of public companies, they are comparable to those of IPO companies (e.g., Beatty 1993).

[28] That audit fees are higher for IPOs than for the subsequent engagement may, at first, seem at odds with O'Keefe et al. (1994), which reports higher audit fees for the public companies in their sample of 249 audits of commercial clients by a major audit firm in 1989. However, because O'Keefe et al. (1994) contains no mention that any of their private companies contemplate an IPO, their finding of higher audit fees for public companies is consistent with our results. While the financial statements in an IPO prospectus pertain to a private company, by definition, these are private companies that intend to go public and auditors are fully aware of this intent.

TABLE 5
Audit Fee Levels Regressions

$$Ln(AuditFees)_{i,t} = \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \varepsilon_{i,t} \quad (2a)$$

$$Ln(AuditFees)_{i,t} = \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \beta_9 IPO_{i,t} + \varepsilon_{i,t} \quad (2b)$$

$$Ln(AuditFees)_{i,t} = \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \beta_9 AuditCommittee_{i,t} + \beta_{10} New/n > 1Auditors_{i,t} + \beta_{11} S-1_{i,t} + \beta_{12} Ln(Amendments)_{i,t} + \varepsilon_{i,t} \quad (2c)$$

$$Ln(AuditFees)_{i,t} = \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \beta_9 AuditCommittee_{i,t} + \beta_{10} New/n > 1Auditors_{i,t} + \beta_{11} S-1_{i,t} + \beta_{12} Ln(Amendments)_{i,t} + \beta_{13} Ln(Proceeds)_{i,t} + \varepsilon_{i,t} \quad (2d)$$

		Pooled Sample		Pre-IPO Year *t*–1			Post-IPO Year *t*
Variable	**E [sign]**	**Equation 2a**	**Equation 2b**	**Equation 2a**	**Equation 2c**	**Equation 2d**	**Equation 2a**
Constant		7.783	6.047	7.611	7.688	3.954	5.039
		(11.63)*	(9.36)*	(8.27)*	(7.77)*	(3.07)*	(6.39)*
Ln(Assets)	+	0.228	0.314	0.265	0.243	0.100	0.386
		(6.74)*	(9.93)*	(5.66)*	(4.95)*	(1.95)***	(9.46)*
InvRec	+	1.232	0.545	0.081	−0.033	−0.068	1.062
		(4.58)*	(2.09)**	(0.22)	(−0.09)	(−0.19)	(3.09)*
Leverage	+	0.459	0.017	0.021	0.058	0.109	−0.007
		(2.68)*	(0.13)	(0.13)	(0.43)	(0.97)	(−0.02)
ROA	−	−0.327	−0.266	−0.174	−0.160	−0.089	−0.258
		(−4.71)*	(−4.61)*	(−2.37)**	(−2.32)**	(−1.40)	(−2.15)**
Loss	+	−0.041	−0.091	−0.000	−0.054	−0.150	−0.154
		(−0.36)	(−0.85)	(−0.00)	(−0.29)	(−0.82)	(−1.27)

(continued on next page)

TABLE 5 (continued)

		Pooled Sample		Pre-IPO Year *t*–1			Post-IPO Year *t*
Variable	**E [sign]**	**Equation 2a**	**Equation 2b**	**Equation 2a**	**Equation 2c**	**Equation 2d**	**Equation 2a**
Big5	+	0.084	−0.029	0.341	0.266	0.442	−0.395
		(0.39)	(−0.13)	(1.07)	(0.77)	(1.58)	(−1.51)
Internet	+/−	0.191	0.155	0.193	0.236	0.209	0.120
		(1.55)	(1.81)***	(1.55)	(1.91)***	(1.77)***	(1.26)
LitRisk	+	0.059	0.109	0.238	0.152	0.135	0.009
		(0.59)	(1.31)	(2.01)**	(1.26)	(1.17)	(0.08)
IPO	+		1.015				
			(11.28)*				
AuditCommittee	+/−				−0.012	0.130	
					(−0.10)	(1.12)	
New/n>1Auditors	+				0.192	0.201	
					(1.60)	(1.84)***	
S-1	+				0.200	−0.009	
					(0.70)	(−0.04)	
Ln(Amendments)	+				0.174	0.193	
					(1.31)	(1.48)	
Ln(Proceeds)	+					0.347	
						(4.65)*	
Observations		284	284	142	142	142	142
Adjusted R^2		27.2%	50.6%	30.9%	30.9%	38.0%	53.5%

(continued on next page)

TABLE 5 (continued)

*, **, *** Significant beyond the 1%, 5% and 10% levels, respectively (two-sided tests).

Observations are 142 (of 454) IPOs during 2000–2002 that clearly report (in their first proxy statement) audit fees for both the IPO and the first post-IPO engagement. *IPO* equals 1 if the pre-IPO year *t*–1 and 0 otherwise. See Table 2 for other variable definitions. OLS regressions and numbers in parentheses are t-statistics that, when a Breusch and Pagan (1979) test rejects beyond a 5% level, are calculated using White-adjusted standard errors (White 1980).

involves (e.g., auditing two balance sheets and three income statements and the "keeping current" requirement). *Ln*(*Proceeds*) measures the auditor's maximum litigation risk exposure for IPOs. We add *Ln*(*Proceeds*) separately in Equation (2d) so as to assess the extent to which higher fees for the IPO audit are associated with this proxy for the auditor's litigation exposure.

$$\begin{aligned} Ln(AuditFees)_{i,t} = {} & \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} \\ & + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \beta_9 AuditCommittee_{i,t} \\ & + \beta_{10} New/n > 1Auditors_{i,t} + \beta_{11} S\text{-}1_{i,t} + \beta_{12} Ln(Amendments)_{i,t} + \varepsilon_{i,t} \qquad (2c) \end{aligned}$$

$$\begin{aligned} Ln(AuditFees)_{i,t} = {} & \beta_0 + \beta_1 Ln(Assets)_{i,t} + \beta_2 InvRec_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} \\ & + \beta_6 Big5_{i,t} + \beta_7 Internet_{i,t} + \beta_8 LitRisk_{i,t} + \beta_9 AuditCommittee_{i,t} \\ & + \beta_{10} New/n > 1Auditors_{i,t} + \beta_{11} S\text{-}1_{i,t} + \beta_{12} Ln(Amendments)_{i,t} \\ & + \beta_{13} Ln(Proceeds)_{i,t} + \varepsilon_{i,t} \qquad (2d) \end{aligned}$$

where:

AuditCommittee = 1 if the IPO prospectus refers to the existence of an audit committee, and 0 otherwise;
New / n > 1Auditors = 1 if the IPO prospectus discloses a change in the registrant's auditor or mentions more than one auditor in the "Experts" section, and 0 otherwise;
S-1 = 1 if IPO issuer files an *S-1* SEC registration statement, and 0 otherwise;
Ln(*Amendments*) = Ln(Number of SEC registration statement amendments IPO issuer files); and
Ln(*Proceeds*) = Ln(Gross IPO proceeds).

Columns four and five of Table 5 shows the results of estimating Equations (2c) and (2d), respectively.[29,30] Consistent with the literature, *Ln*(*Proceeds*) is positively associated with IPO audit fees; and, moreover, its coefficient is three times that of *Ln*(*Assets*) and its significance is despite their Pearson correlation of 0.84. Because Equation (2d) is a double-log specification, the coefficients on *Ln*(*Assets*) and *Ln*(*Proceeds*) are elasticities (the percentage change in audit fees divided by the percentage change in assets or proceeds). The elasticity between IPO proceeds and IPO audit fees implies that a 1 percent increase in proceeds (per Table 2, \$182.349 million * 1 percent or \$1,823,500) is associated with a 0.347 percent increase in average IPO audit fees (per Table 2, \$612.240 thousand * 0.00347 or \$ 2,100). Put another way, an additional \$1 million in proceeds is associated with an increase in audit fees of \$1,200. Overall, these results show that IPO audit fees are higher than post-IPO audit fees, and the association between IPO

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[29] Of the 142 IPOs in this analysis, two disclose a switch from a local to a more credible, nationally known auditor. Our results are unaffected if we exclude these two IPOs from the audit fees analysis (in either levels or changes).

[30] The insignificance of *S-1* is likely because 93 percent of our sample issuers file an *S-1* registration statement (Table 2).

proceeds and IPO audit fees is robust to variables that proxy the increase in audit effort associated with IPOs.[31,32]

These findings support the view that, in the IPO market, auditors receive higher fees for the increase in litigation risk the 1933 Act portends and that the extent of their exposure helps to explain audit fee levels. Consistent with Dye (1993), the increase in the option on the auditor's wealth for an IPO audit is associated with an increase in audit fees. Our findings are also consistent with the empirical literature on audit production (O'Keefe et al. 1994; Stein et al. 1994; Bell et al. 2001) that find audit hours are increasing in partner assessments of inherent and business risk. In our IPO setting, it seems plausible that auditors expend effort in accordance with their litigation liability risk exposure.

Audit Fee Changes

A stricter test is to study the change in audit fees, from IPO to post-IPO audit. The above analysis shows that audit fees are higher for IPOs, and are associated with certain variables that proxy the additional effort and litigation exposure IPO audits entail. It does not test whether the change in audit fees is associated with variables that proxy for this effort and litigation exposure.

As Figure 1 shows, audit fees decline for 127 of 142 (about 90 percent) of our sample. Of the companies with lower post-IPO fees, two experience very large decreases. These two IPOs are among the largest, in terms of proceeds, in our sample. That they are among the largest IPOs and have large declines in audit fees is consistent with our expectations (i.e., because these IPOs are large, their IPO audit fee includes a large litigation-risk component). However, large IPOs often involve large companies. Indeed, these companies are among the largest in our sample, in terms of pre-IPO assets, and illustrate the importance of scale effects (i.e., because large companies pay large audit fees, they are obvious candidates for large decreases in audit fees).

To study the relation between audit fee changes and the additional responsibilities and litigation exposure that pertain to IPO audits, we specify Equation (3). We include only those determinants of audit fees that are likely to change with the change in the auditor's litigation exposure (i.e., the variables in Equations (2c) and (2d) that are particular to the IPO audit). To consider scale effects, we deflate the change in audit fees and IPO proceeds by pre-IPO assets.

In addition to a change in litigation risk, an IPO also affects company size. To the extent proceeds represent an increase in a company's assets, from pre- to post-IPO balance sheet, they should be *positively* associated with the change in audit fees. This is because, other things equal, an increase in assets is associated with an increase in audit fees. However, other things are not equal in the context of a company's IPO. Because proceeds measure the auditor's 1933 Act exposure, they should be *negatively* associated with the change in audit fees, from pre- to post-IPO. Put another way, if IPO proceeds are positively associated with an (one-time) increase in the IPO audit fee, IPO proceeds should be inversely associated with the change in audit fees.[33]

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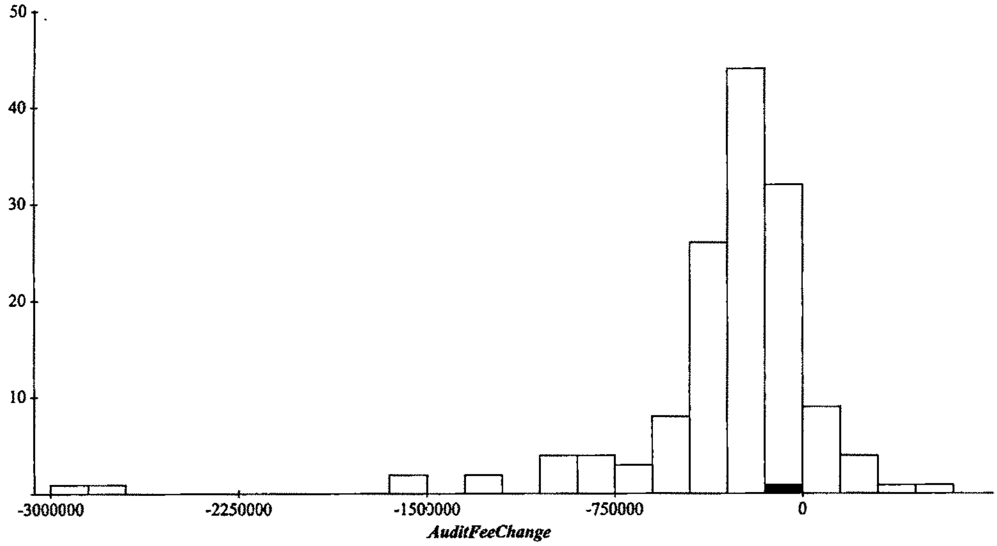
[31] In Equation (2), we specify the dependent variable as a logarithmic transformation because of its prevalence in the literature and it provides a convenient (elasticity-based) interpretation. In Equation (3), we specify the dependent variable as the change in audit fees scaled by assets. We use this specification because levels can decline and we cannot take a logarithmic transformation of a negative number. To compare these levels and changes, we ran a levels specification where the dependent variable is audit fees scaled by assets and the covariates exclude assets. The results (untabled) are severely affected by one outlier, with an externally studentized residual of 31. While including it does not affect the Table 5 results (nor does any observation), once we remove this IPO (without or with all observations with residuals in excess of |2|), the results are consistent with those in Table 5

[32] Using the 109 IPOs with data for both audit fees and abnormal accruals, we ran regressions that control for abnormal accruals. Results (untabled) provide no support for an association between audit fees and accruals.

[33] Because scaled proceeds and the scaled change in assets are essentially identical (their Pearson correlation is 0.98), we do not specify the scaled change in assets in Equation (3).

FIGURE 1
Histogram of Audit Fee Changes
Pre-IPO Audit Fee to Post-IPO Audit Fee[a]



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[a] Sample histogram of *AuditFeeChange*, the audit fee for the 1st post-IPO year minus the audit fee for the IPO. The number of observations is 142 and the "counts" for each histogram bar (going from left to right are: 1, 1, 2, 2, 4, 4, 3, 8, 26, 44, 32, 9, 4, 1, 1). Each bar represents a $150,000 change in audit fees.

$$AuditFee\Delta_{i,t}/Assets_{i,t-1} = \beta_0 + \beta_1 AuditCommittee_{i,t-1} + \beta_2 New/n > 1Auditors_{i,t-1} + \beta_3 S\text{-}1_{i,t-1} + \beta_4 Ln(Amendments)_{i,t-1} + \beta_5 Proceeds_{i,t-1}/Assets_{i,t-1} + \varepsilon_{i,t} \qquad (3)$$

where:

$AuditFee\Delta\,/\,Assets$ = (post-IPO audit fee – IPO audit fee)/total assets (pre-IPO); and
$Proceeds\,/\,Assets$ = gross proceeds from the IPO/total assets (pre-IPO).

Column one of Table 6 shows the results of estimating Equation (3). A Breusch and Pagan (1979) test indicates a high degree of heteroscedasticity and White-adjusting the standard errors (White 1980) has a dramatic effect on the significance of *Proceeds / Assets* (i.e., prior to adjustment, its t-statistic is −14.69, whereas afterwards it is −2.82). Diagnostics also reveal five observations with absolute values of externally studentized residuals in excess of two (Belsley et al. 1980). Column 2 of Table 6 re-estimates Equation (3) after excluding these observations. While *Proceeds / Assets*'s coefficient goes from −0.006 to −0.004, eliminating these outliers leads to a more precise estimate, as its t-statistic goes from −2.82 to −8.51. In summary, the change in audit fees is negatively associated with our proxy for the auditor's litigation risk exposure.

Overall, these findings support the view that, in the IPO market, conditions are such that auditors receive higher fees for the exposure to litigation risk the 1933 Act portends. Because the

TABLE 6
Audit Fee Changes Regressions

$$\begin{aligned} AuditFee\Delta_{i,t}/Assets_{i,t-1} &= \beta_0 + \beta_1 AuditCommittee_{i,t-1} + \beta_2 New/n > 1Auditors_{i,t-1} + \beta_3 S\text{-}1_{i,t-1} \\ &+ \beta_4 Ln(Amendments)_{i,t-1} + \beta_5 Proceeds_{i,t-1}/Assets_{i,t-1} + \varepsilon_{i,t} \qquad (3) \end{aligned}$$

Variable	E[sign]	Full Sample Equation (3)	Excluding Influential Observations Equation (3)
Constant		0.035	0.007
		(1.82)***	(1.27)
AuditCommittee	−	−0.005	−0.002
		(−1.00)	(−1.12)
New / n > 1Auditors	−	−0.003	−0.002
		(−0.94)	(−0.84)
S-1	−	−0.032	−0.004
		(−1.55)	(−0.60)
Ln(Amendments)	−	0.003	−0.001
		(0.56)	(−0.70)
Proceeds / Assets	−	−0.006	−0.004
		(−2.82)*	(−8.51)*
Observations		142	137
Adjusted R^2		60.6%	60.8%

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*, **, ***Significant beyond the 1%, 5% and 10% levels, respectively (two-sided tests).

In column one, observations are 142 (of 454) IPOs during 2000–2002 that clearly report (in their first proxy statement) audit fees for both the IPO and the first post-IPO engagement. In column two, following , Belsley et al. (1980), we exclude five observations with absolute values of their externally studentized residuals in excess of two. *AuditFeeΔ / Assets* is (Post-IPO audit fee − IPO audit fee)/Total assets (pre-IPO). *Proceeds / Assets* is gross IPO proceeds/Total assets (pre-IPO). See Table 2 for other variable definitions. OLS regressions and numbers in parentheses are t-statistics that, because a Breusch and Pagan (1979) test rejects beyond a 5% level, are calculated using White–adjusted (White 1980) standard errors.

1933 Act establishes proceeds as the upper limit on damages, IPO proceeds measure the auditor's maximum litigation risk exposure. We find that the extent of this exposure helps explain both the level of IPO audit fees, and the change from IPO audit fee to post-IPO audit fee.

VII. CONCLUSION

We use the IPO setting to study the relation between legal liability and audit quality and audit fees. We examine accruals and audit fees as companies cross the exogenous change in litigation risk from 1933 Act to 1934 Act. For IPOs, where securities laws impose an extra onus on auditors, our results suggest audit quality and audit fees are higher than for post-IPO audits.

Some claim the Private Securities Litigation Reform Act (PSLRA) of 1995 is a source of recent scandals. For example, per Representative Markey's statement to the Congressional Oversight and Investigations Subcommittee, "this ill-advised law has directly contributed to a rising tide of accounting failures, culminating in the Enron-Arthur Andersen fiasco. The types of internal checks and balances that a healthy concern about litigation risk used to create within each accounting firm have been undermined." Our findings suggest, at least in the context of an IPO audit, that there appears to be a "healthy concern about litigation risk." As such, our paper may have relevance to present-day calls for reductions in auditor liability by the U.S. Chamber of Commerce (2006), the European Union (Buck and Jopson 2006) and the Committee on Capital Markets Regulation (Hubbard and Thornton 2006; Norris 2006; Reilly 2006).

Our paper also contributes to the literature on earnings management in IPOs by Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998). These oft-cited papers report that issue-year accruals for IPOs are "unusually high," and suggest issuers inflate earnings to dupe investors into paying a higher price for IPO shares.[34] For some this is troubling, "the ... interpretation ... as indicating that intentional earnings management at the time of security issuance is successful in misleading investors, makes me uncomfortable ... [as it] implies that financial statement fraud is pervasive at the time of issuance" (Beneish 1998, 209–210). We extend Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998) by using pre-IPO financial statements to compute pre-IPO accruals, and find no evidence that pre-IPO accruals appear opportunistically high. To the contrary, our results suggest that, consistent with the increase in liability they face, auditors allow their IPO clients less (not more) discretion.

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[34] In addition, these papers garner press coverage. For example, referring to Teoh, Welch, and Wong (1998), Browning (1998, C-1) states "[i]nvestors buy new-stock offerings in hopes of getting something hot. Unfortunately, according to ... new academic studies, they often get something cooked up."

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Staggered Boards and Earnings Management

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ABSTRACT: The literature suggests that staggered boards may have two opposite effects on earnings management: the expropriation view emphasizes the exacerbating effect, whereas the quiet life view advocates the mitigating effect. We use two approaches to examine this issue: a small-sample test based on whether firms are accused of committing financial reporting fraud, and a large-sample test based on the absolute value of unexpected accruals. We find that staggered boards are associated with lower likelihoods of committing fraud and smaller magnitudes of absolute unexpected accruals. Consistent with prior studies, we also find that staggered boards are negatively associated with firm value. The results suggest that staggered boards may enable managers to enjoy the quiet life and lessen their motivation to increase firm value; as a consequence, managers are not motivated to manage earnings.

Keywords: *staggered boards; earnings management; takeover; quiet life view.*

Data Availability: *The list of sample fraud firms is available from the first author upon request. The remainder of the data is available from public sources.*

I. INTRODUCTION

The finance literature has sought to demonstrate a link between proxies for weak governance (management entrenchment) and firm performance (e.g., Morck et al. 1988; Yermack 1996; Gompers et al. 2003). Following this link, the accounting literature has attempted to show that weak governance is associated with greater earnings management (e.g., Beasley 1996; Klein 2002). Recently, Bebchuk and Cohen (2005) and Faleye (2007) have shown that staggered boards (a potent antitakeover device) are associated with substantial reductions in Tobin's Q, suggesting that staggered boards are a type of weak governance that entrenches managers and impairs firm value. The purpose of this study is to extend these two prior streams of literature by examining the relation between staggered boards and earnings management.

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Competing views on the preferences of entrenched managers suggest two contradictory effects of staggered boards on earnings management. The "expropriation" view argues that entrenched managers are likely to expropriate shareholder wealth (Shleifer and Vishny 1997), which, in turn, increases the likelihood of managing earnings in an attempt to conceal ill-gained private benefits and to avoid legal penalties or other undesirable consequences. As staggered boards help entrench incumbent managers, proponents of the expropriation view believe that staggered boards exacerbate earnings management. In contrast, the "quiet life" view argues that entrenched managers prefer to enjoy the quiet life and avoid costly efforts when insulated from takeover threats (Bertrand and Mullainathan 2003). As staggered boards strengthen protection from takeover, they enhance managers' incentives to enjoy the quiet life rather than engage in costly expropriation activities. Thus, not only do staggered boards likely mitigate earnings management intended to disguise the expropriation, but they also diminish the need of managers to ease takeover pressure through earnings management. In sum, these two competing views suggest that the relationship between staggered boards and earnings management is an ambiguous empirical issue.

We employ two commonly used proxies for earnings management to examine this issue. The first proxy is financial reporting fraud (Beasley 1996; Erickson et al. 2006). Following a rigorous sample selection procedure, we identify 83 U.S. firms accused by the Securities and Exchange Commission (SEC) of having committed financial reporting fraud between 1995 and 2001. Each of these fraud firms is matched with two no-fraud control firms based on size, industry, and time period. The second proxy is the absolute value of unexpected accruals, computed following Klein (2002), which allows us to conduct a large-sample test on staggered boards and earnings management. The large-sample test consists of 4,292 U.S. firm-years between 1995 and 2001 that have complete data.

We begin with examining whether the negative association between staggered boards and Tobin's Q holds in our study. Although the small-sample tests yield mixed results, the large-sample tests show that staggered boards are significantly associated with a lower Tobin's Q. This result confirms that staggered boards generally entrench managers and impair firm value—a finding consistent with prior large-sample studies (Bebchuk and Cohen 2005; Faleye 2007). Using logistic regression, we also find that firms with staggered boards are less likely to commit financial reporting fraud, which is consistent with staggered boards mitigating earnings management that violates Generally Accepted Accounting Principles (GAAP). The results of the large-sample test also show that staggered boards are associated with lower magnitudes of absolute unexpected accruals, suggesting that the mitigating effect applies also to earnings management permissible within GAAP. Finally, we demonstrate that the findings of these tests hold with various robustness checks, including variations in model specifications.

Overall, our findings indicate that staggered boards may reduce the motivation of managers to manage earnings. However, prior studies (Bebchuk and Cohen 2005; Faleye 2007), as does this paper, also suggest that staggered boards entrench managers, as reflected in lower firm value. One interpretation that reconciles these seemingly contradictory findings is that managers of firms with staggered boards tend to enjoy the quiet life and have less incentive to increase firm value, and as a consequence are not motivated to manage earnings. In the absence of staggered boards, less-protected managers likely increase their efforts to enhance firm value, but they may also resort to managing earnings. Thus, our findings are also consistent with the argument that capital market pressures motivate earnings management (e.g., Dechow and Skinner 2000).

This paper contributes to the literature in two ways. One primary contribution of this paper is that, in contrast to prior studies that have generally hypothesized and found a positive relation between weak governance and earnings management (e.g., Beasley 1996; Klein 2002; Leuz et al. 2003), we find that staggered boards, as a type of weak governance, are negatively associated with earnings management. Prior studies, particularly those analyzing international settings (e.g., Fan and Wong 2002; Leuz et al. 2003), generally postulate that weak governance exacerbates earnings management intended to conceal expropriation activities. However, this expropriation view is likely not applicable to most U.S. corporations. One reason may be that the U.S. legal system is generally effective in protecting investor interests against managerial expropriation (Shleifer and Vishny 1997; La Porta et al. 1998), which increases the cost and difficulty for managers to expropriate shareholder wealth. Focusing on U.S. corporations, we are the first to document evidence consistent with the quiet life effect of weak external governance on earnings management. Future studies need to incorporate this quiet life view into examining the relationship between corporate governance and earnings management.

This paper also contributes to the recent literature on the effect of staggered boards on firm value and corporate behaviors. Prior studies (e.g., Bebchuk and Cohen 2005; Faleye 2007) suggest that staggered boards impair firm value, deter proxy contests, and reduce the likelihood of involuntary executive turnover. Besides documenting evidence consistent with these studies, we extend this line of inquiry by finding that firms with staggered boards commit less earnings management than those with unitary boards. These results add to our understanding of the nature of the agency conflict between shareholders and incumbent managers, and the role staggered boards may play in corporate governance. Our evidence suggests that staggered boards allow managers to enjoy the quiet life and thus dampen their motivation to manage earnings.

Finally, our findings can have important policy implications. The Sarbanes-Oxley Act and other reforms are intended to strengthen corporate governance and improve financial reporting quality. Along these efforts, shareholder activists have called for reducing antitakeover provisions, including declassifying staggered boards, to further reduce fraudulent reporting (McGurn 2002). Our findings suggest that, on average, staggered boards lead to less earnings management, but also lower firm performance. There may exist a trade-off between reducing earnings management and achieving higher firm performance. Although the overall net social benefit of antitakeover protection remains an open question, regulators and shareholders need to beware of this trade-off when they consider reforms to reduce such protection.[1]

This study is subject to three major limitations that are common to studies of this nature. First, the sample of fraud firms is selected from the pool of firms accused of fraud by the SEC, which may not be representative of all firms that engage in financial reporting fraud. Second, the absolute value of unexpected accruals is merely a statistical estimate and may not be very powerful in identifying unobservable earnings management mechanisms. Third, although we have tried to address the problem of endogeneity of staggered boards through the inclusion of several controls in the multivariate analyses, we cannot include all the factors.

The remainder of this study proceeds as follows: Section II reviews the literature and develops the testing hypothesis, Section III describes empirical models and variable measurements, Section IV delineates sample selection procedures, Section V presents the results, and Section VI summarizes this study.

II. THEORY AND HYPOTHESIS DEVELOPMENT

At each annual election, U.S. firms can elect a board of directors in its entirety (a unitary board) or on staggered terms (a staggered board). A staggered board makes it extremely difficult for shareholders to mount a successful takeover and is therefore a powerful takeover defense (Coates 2000; Bebchuk et al. 2002). Bebchuk and Cohen (2005) and Faleye (2007) find that staggered boards are associated with reductions in Tobin's Q, a proxy for firm value. These results suggest that staggered boards entrench incumbent managers and impair shareholder value.

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[1] For example, in 2003 the SEC proposed the Security Holder Director Nominations rule, which aimed to increase shareholder access to the board nomination process.

Not all researchers, however, agree on managerial preferences when managers are entrenched and insulated from takeover threats. Two competing views on the preferences of entrenched managers suggest contradictory arguments on the effects of staggered boards on earnings management.

Expropriation View: Staggered Boards Exacerbating Earnings Management

Several studies argue that entrenchment increases the likelihood of managers expropriating shareholder wealth (e.g., Fama and Jensen 1983; Shleifer and Vishny 1997). Ample anecdotal evidence also points to expropriation of corporate funds by entrenched managers. For example, the dual-class voting structure of Adelphia Communications Corporation allowed the Rigas family, the founders, to control the firm, which insulated the firm from takeover. The SEC filed charges in 2004 against the Rigas family for misrepresenting material facts and expropriating corporate funds for personal use. The Hollinger case provides another example of managerial expropriation. This firm was charged in 2004 with manipulating earnings to conceal its managers' self-dealing through a series of related-party transactions. Similar charges also have been levied in other white-collar trials.

Since staggered boards help entrench managers, the expropriation view suggests that staggered boards increase the incidence of earnings management. Entrenched managers who expropriate shareholder wealth would likely manipulate reported earnings to disguise improperly reaped private benefits and minimize detection by shareholders. Self-dealing behaviors such as expropriation of corporate funds benefit managers but impair a firm's economic performance (Scharfstein 1988). However, in the U.S., shareholder interests are well protected by both legal rules and the system that enforces these rules (La Porta et al. 1998). U.S. courts generally manage to keep down outright managerial expropriation (Shleifer and Vishny 1997). Thus, managers who engage in expropriation activities have an incentive to manage reported earnings so as to temper the likelihood of being detected and avoid subsequent legal penalty or other undesirable consequences.

In sum, proponents of the expropriation view are of the opinion that staggered boards entrench managers and encourage their expropriation activities, which in turn motivates managers to manage earnings as a way to cover up the earnings effects of their wealth extraction.

Quiet Life View: Staggered Boards Mitigating Earnings Management

The agency theory literature (e.g., Alchian and Demsetz 1972; Jensen and Meckling 1976) examines managerial shirking as an important economic force. Bertrand and Mullainathan (2003) and Atanassov (2006) find that entrenched managers avoid activities involving "difficult decisions and costly efforts" (Bertrand and Mullainathan 2003, 1047). They propose a quiet life view, which argues that managers *prefer* to enjoy the quiet life if protected from takeover threats.

The quiet life view suggests two reasons for U.S. firms with staggered boards to have reduced incidences of earnings management. First, entrenched managers prefer the quiet life to the expropriation of shareholder wealth. With shareholder interests well protected by the U.S. legal system (Shleifer and Vishny 1997), expropriation of shareholder funds is *costly* to managers, because (1) such activities require extra managerial efforts to design plots, which can get rather sophisticated, to conceal improperly acquired private benefits and (2) managers, if their expropriations are detected, may face severe legal as well as reputational penalties and lose their quiet life.[2] Thus, U.S. managers may prefer not to expropriate shareholder wealth and may prefer not to manage earnings to disguise the expropriation if they are able to enjoy the quiet life with the help of staggered boards.

Second, the absence of staggered boards increases takeover pressure, which would likely induce managers to manage reported earnings. When a firm is acquired, incumbent managers are likely dismissed (Morck et al. 1989). To lessen this risk, less-protected managers may attempt to obfuscate firm performance, either by boosting reported earnings through cutting long-term investments (Stein 1988) or by lowering the transparency of financial disclosures (Berger and Hann 2002; Fu and Liu 2007).[3] Since earnings management results in obscure information about firm performance, managers also likely manage reported earnings to lessen takeover threats. In contrast, staggered boards strengthen protection from takeover and enable incumbent managers to enjoy the quiet life, thus diminishing the need of managers to manage reported earnings.

Given that the literature offers conflicting views on the effect of staggered boards on earnings management, we test the following nondirectional hypothesis:

H1: *Ceteris paribus*, staggered boards are associated with earnings management.

III. EMPIRICAL MODELS AND VARIABLE MEASUREMENT

This section discusses the empirical models to be tested. Table 1 provides definitions of all variables included in the models. The independent variable of interest is *StagBoard*, a dummy variable with a value of 1 for firms with a staggered board, and 0 otherwise. We measure the value of *StagBoard* prior to earnings management to ensure that managers were aware of the board election mechanism at the time of earnings management. Below we briefly discuss other variables included in the models.

Proxy for Earnings Management

Given no clear consensus on the measurement of earnings management, we adopt two commonly used proxies for earnings management. The first proxy, *Fraud*, is a dummy variable indicating whether a firm is engaged in financial reporting fraud during the sample period (Beasley 1996; Erickson et al. 2006). This proxy reflects a direct, observable event of earnings management that violates GAAP. The second proxy is based on Klein's (2002) measure of the absolute value of unexpected accruals. This measure allows us to conduct a large-sample test on the relation between staggered boards and earnings management permissible within GAAP.

Model for Analysis of Financial Reporting Fraud

Our focus is on testing for an association between financial reporting fraud and staggered boards and we follow prior literature (e.g., Beasley 1996; Erickson et al. 2006) in measuring an extensive number of controls for alternative reasons for fraud firms to differ. In all, we identify 19 control variables. The model we use for the tests is:

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[2] For example, in June 2007, members of the Rigas family were sentenced to serve from 10 months to 25 years, including a 15-year sentence for the 81-year-old chairman of the board.

[3] Prior studies (e.g., Garvey and Hanka 1999; Cheng et al. 2005) suggest that managers may also take other approaches to lessen takeover threats, such as increasing financial leverage or managerial ownership.

TABLE 1
Variable Definitions[a]

Variables		Definitions
Fraud	=	a dummy variable with a value of 1 if a firm is alleged to have committed financial reporting fraud in year t, and 0 otherwise;
StagBoard	=	a dummy variable with a value of 1 if the firm has a staggered board in year $t-1$, and 0 otherwise;
MVEquity	=	the market value of common equity (#199 * #25) at the end of year $t-1$, restated into a constant dollar of 1995 using the Consumer Price Index;
NetSales	=	net sales (#12) in year $t-1$;
Log(Assets)	=	the natural log of total assets (#6) at the end of year $t-1$, restated into a constant dollar of 1995 using the Consumer Price Index;
Leverage	=	the ratio of long-term debt (#9) to total assets (#6) at the end of year $t-1$;
AltmansZ	=	Altman's (1968) Z-score in year $t-1$ as updated by Begley et al. (1996), where Altman's Z-score $= 10.4X_1 + 1.0X_2 + 10.6X_3 + 0.3X_4 - 0.17X_5$, with $X_1 =$ working capital/total assets, $X_2 =$ retained earnings/total assets, $X_3 =$ earnings before interest and taxes/total assets, $X_4 =$ market equity/total liabilities and $X_5 =$ sales / total assets;
SalesGrowth	=	the percentage change in net sales (#12) from year $t-2$ to year $t-1$;
FirmAge	=	the difference between the starting date of the firm (*ST_DATE* in CRSP) and the end of year $t-1$, measured in years;
Financing	=	a dummy variable with a value of 1 if the firm's free cash in year t ($FREECASH_t$) is less than 0.5, and 0 otherwise, where $FREECASH_t =$ {Operating Cash Flow_t (#308) – Average Capital $\text{Expenditures}_{t-3 \text{ to } t-1}$ (#128)}/Current Assets_{t-1} (#4);
TobinsQ	=	the ratio of the market value of the total firm to the book value of assets (#6), measured at the end of year t for the large-sample tests and at the end of year $t-1$ for the small-sample tests, where the market value of the total firm is measured as the sum of the market value of common equity (#199 * #25), the liquidating value of preferred stock (#10), the value of current liabilities net of current assets (#5 – #4), and the book value of long-term debt (#9) (Chung and Pruitt 1994);
B/M	=	the ratio of the book value of assets (#6) to the market value of the total firm, measured at the end of year $t-1$;
M/B	=	the ratio of the market value of the total firm to the book value of assets (#6), measured at the end of year $t-1$;
ROA	=	the ratio of net income (#172) in year $t-1$ to total assets (#6) at the end of year $t-1$;
E/P	=	the ratio of net income per share (#172/#25) in year $t-1$ to stock price (#199) at the end of year $t-1$;

(continued on next page)

TABLE 1 (continued)

Variables		Definitions
M&AFraudYear	=	a dummy variable with a value of 1 if the firm had an acquisition that contributed to sales (i.e., $\#249 > 0$) in year t, and 0 otherwise;
StkVolatility	=	the standard deviation of stock returns over 60 months prior to the end of year $t-1$;
CapEx/Assets	=	the ratio of capital expenditures (#128) to total assets (#6) in year $t-1$;
OperProfit	=	the ratio of operating income (#178) to total assets (#6) in year $t-1$;
DelawareInc	=	a dummy variable with a value of 1 if the firm is incorporated in Delaware in year $t-1$, and 0 otherwise;
PoisonPill	=	a dummy variable with a value of 1 if the firm has a poison pill in year $t-1$, and 0 otherwise;
OtherGovIndex	=	the number of antitakeover provisions other than staggered boards adopted by the firm in year $t-1$;
DualMajorityOwn	=	a dummy variable with a value of 1 if the firm has a dual-class voting stock or a majority of the firm's stock is in the hands of insiders, and 0 otherwise;
CEO=Chair	=	a dummy variable with a value of 1 if the CEO chairs the board in year $t-1$, and 0 otherwise;
CEOTenure	=	the number of years that the CEO has served as a CEO of the firm as of year $t-1$;
Abs(*AAC*)	=	the absolute value of the accruals prediction error from a cross-sectional Jones (1991) model estimated for each two-digit SIC industry in year t (Klein 2002, 382);
UnexpectedAcc	=	unexpected accruals measured as each firm's *Abs*(*AAC*) minus the median value of *Abs*(*AAC*) for a portfolio of firms matched on the standard deviation of past total accruals (Klein 2002, 381–386);
Abs(*UnexpectedAcc*)	=	the absolute value of *UnexpectedAcc* in year t (Klein 2002, Table 6);
NegNI	=	a dummy variable with a value of 1 if the firm had two or more consecutive years of negative income before extraordinary items (#18) ending on the year $t-1$, and 0 otherwise;
Abs(Δ*NI*)	=	the absolute value of the change in net income before extraordinary items (#18) between years $t-1$ and t, deflated by total assets (#6) at the end of year $t-1$;
CEOOwn%	=	the percentage of ownership by the CEO in year $t-1$;
AudComBlock	=	a dummy variable with a value of 1 if an outside 5 percent blockholder sits on the board's audit committee in year $t-1$, and 0 otherwise;
#BoardMeet	=	the number of board meetings held during year $t-1$;

(continued on next page)

TABLE 1 (continued)

Variables		Definitions
OutsideDir51%	=	a dummy variable with a value of 1 if the board has at least a majority of independent directors in year $t-1$, and 0 otherwise, where independent directors refer to outside directors who are not affiliated with the firm;
%OutsideDir	=	the percentage of independent directors on the board in year $t-1$;
#Directors	=	the number of directors serving on the board in year $t-1$;
InsidersOwn%	=	the percentage of ownership by all insiders (executives and directors) in year $t-1$;
InsidersOwnI%	=	*InsidersOwn%* if *InsidersOwn%* < 0.05, and 0.05 if *InsidersOwn%* ≥ 0.05;
InsidersOwnII%	=	0 if *InsidersOwn%* < 0.05, *InsidersOwn%* minus 0.05 if $0.05 \leq$ *InsidersOwn%* < 0.25, and 0.20 if *InsidersOwn%* ≥ 0.25;
InsidersOwnIII%	=	0 if *InsidersOwn%* < 0.25, and *InsidersOwn%* minus 0.25 if *InsidersOwn%* ≥ 0.25;
BlockOwn%	=	the percentage of ownership by outside blockholders not affiliated with the firm as an officer or director, or with an affiliated entity or the Employee Share Ownership Plans in year $t-1$;
DirTenure	=	the average tenure of directors as of year $t-1$;
DirAge	=	the average age of directors as of year $t-1$;
#Dirships	=	the average number of other boards on which directors serve in year $t-1$;
IndepNomCom	=	a dummy variable with a value of 1 if the firm has a nominating committee of which the CEO is not a member in year $t-1$, and 0 otherwise;
AudComOutsideDir51%	=	a dummy variable with a value of 1 if the firm's audit committee has at least a majority of independent directors in year $t-1$, and 0 otherwise;
#AudComMeet	=	the number of audit committee meetings held during year $t-1$;
%AudComOutsideDir	=	the percentage of independent members on the audit committee in year $t-1$;
StdDev(CFO)	=	the standard deviation of operating cash flows (#308, deflated by lagged total assets, #6) over the five-year period from year $t-4$ to year t (Hribar and Nichols 2007, 1027); and
t	=	fiscal year in which the fraud initially occurs (small-sample tests) or earnings management occurs (large-sample tests).

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[a] Compustat items are in parentheses.

$$
\begin{aligned}
\mathit{Fraud} = {} & \beta_0 + \beta_1 \mathit{StagBoard} + \beta_2 \mathit{Leverage} + \beta_3 \mathit{AltmansZ} + \beta_4 \mathit{SalesGrowth} + \beta_5 \mathit{FirmAge} \\
& + \beta_6 \mathit{Financing} + \beta_7 \mathit{B/M} + \beta_8 \mathit{ROA} + \beta_9 \mathit{E/P} + \beta_{10} \mathit{M\&AFraudYear} + \beta_{11} \mathit{StkVolatility} \\
& + \beta_{12} \mathit{MVEquity} + \beta_{13} \mathit{OutsideDir51\%} + \beta_{14} \mathit{\#BoardMeet} + \beta_{15} \mathit{CEO{=}Chair} \\
& + \beta_{16} \mathit{CEOTenure} + \beta_{17} \mathit{BlockOwn\%} + \beta_{18} \mathit{InsidersOwn\%} + \beta_{19} \mathit{DelawareInc} \\
& + \beta_{20} \mathit{PoisonPill} + \varepsilon. \qquad (1)
\end{aligned}
$$

The control variables consist of three categories. The first category comprises financial and market-based variables that may affect managers' incentives to manage earnings: firm leverage (*Leverage*), firm growth (*SalesGrowth*), firm age (*FirmAge*), need for external financing (*Financing*), financial distress (*AltmansZ*), financial performance (*B/M*, *ROA*, and *E/P*), the underlying risks of the firm (*StkVolatility*), and whether the firm is involved in a merger or acquisition during the first fraud year (*M&AFraudYear*) (Erickson et al. 2006). To control for differences in firm size, we adopt a matched-pairs design that matches firms of similar size, as measured by net sales (*NetSales*). Following Erickson et al. (2006), we also include another size-related control variable, the market value of common equity (*MVEquity*), because market capitalization and net sales may measure different aspects of firm size. All variables are calculated using data from either Standard & Poor's Compustat or the Center for Research in Security Prices (CRSP).

The second category of control variables pertains to corporate governance features that are likely to have an effect on managers' opportunities to manage earnings. Following Beasley (1996) and Erickson et al. (2006), we control for board of director composition (*OutsideDir51%*), CEO influence on the board (*CEO=Chair* and *CEOTenure*), the board's monitoring efforts (*BoardMeet*), and outside blockholder ownership (*BlockOwn%*). Proxy statements (DEF 14A) provide data for these governance features, including ownership structure and board characteristics.

Corporate governance features, including the board election mechanism, are endogenous variables determined by *ex ante* factors. These same factors could also be determinants of engaging in financial reporting fraud. Should that be the case, comparing managerial reporting behavior between firms with and without a staggered board may simply capture the effects of those underlying, possibly unobservable factors. To mitigate this potential endogeneity, we include a third category of control variables.[4] Other antitakeover devices, such as managerial ownership (Cheng et al. 2005), financial leverage (Garvey and Hanka 1999), state of incorporation (Daines 2001), and poison pills (Berger and Hann 2002), may serve as substitutes for staggered boards. Thus, besides *Leverage*, we control for three additional variables, *InsidersOwn%* (insider ownership), *DelawareInc.* (a dummy variable that indicates Delaware corporations), and *PoisonPill* (a dummy variable that indicates whether a firm has a poison pill in place), to capture differences in necessity to adopt a staggered board. Furthermore, Santaló (2006) document that firm size, performance, growth, and stock return volatility are associated with the level of antitakeover provisions adopted by a firm, suggesting that inclusion of *MVEquity*, *ROA*, *SalesGrowth*, and *StkVolatility* also helps mitigate concerns related to correlated omitted variables.

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[4] To the extent that we cannot control for all the underlying factors, the results could be affected.

Model for Absolute Unexpected Accruals Analysis

To test whether the effect of staggered boards is generalizable to a large sample, we also examine the large-sample relation between staggered boards and earnings management. To do this, we replicate Klein (2002, Table 6), and in addition to all the variables Klein includes, we include a staggered board indicator. The model is as follows:

$$\begin{aligned} Abs(UnexpectedAcc) = {} & \beta_0 + \beta_1 StagBoard + \beta_2 OutsideDir51\% + \beta_3 AudComBlock \\ & + \beta_4 OutsideDir51\% + \beta_5 M/B + \beta_6 Abs(\Delta NI) + \beta_7 NegNI + \beta_8 Leverage \\ & + \beta_9 Log(Assets) + \varepsilon. \end{aligned} \tag{2}$$

We proxy for earnings management using the absolute value of unexpected accruals ($Abs(UnexpectedAcc)$), measured following Klein (2002, Table 6):

$$Abs(UnexpectedAcc)_{it} = Abs[Abs(AAC_{it,p}) - \text{Median } Abs(AAC)_{t,p}].$$

We follow Klein (2002) because she examines the large-sample relation between corporate governance and earnings management. In addition, Hribar and Nichols (2007, footnote 12, p. 1033) commend Klein's measure of earnings management. In the above, $Abs(AAC_{it,p})$ is the absolute value of the accruals prediction error from a cross-sectional Jones (1991) model that is estimated by industry-year, and Median $Abs(AAC)_{t,p}$ is the median $Abs(AAC)$ for a portfolio of Compustat firms that have the same percentile ranking of the standard deviation of total accruals (deflated by assets) for the ten years prior to year t (Klein 2002, 381–386). Klein thus uses Median $Abs(AAC)_{t,p}$ as the expectation for $Abs(AAC_{it,p})$. Accordingly, the absolute value of the difference between $Abs(AAC_{it,p})$ and Median $Abs(AAC)_{t,p}$ is analogous to the absolute value of an unexpected accrual.

The control variables include both financial factors (firm growth, stability of performance, past negative earnings, financial leverage, and firm size), and corporate governance features such as board composition, blockholder ownership, and CEO ownership.[5] As alternate model specifications, we include *DelawareInc*, *PoisonPill*, and *OtherGovIndex* (the number of antitakeover provisions other than staggered boards) to control for the effect of other antitakeover devices.

A more typical approach in the literature, as discussed by Hribar and Nichols (2007), would use $Abs(AAC_{it,p})$ as the dependent variable (and not subtract its expectation, Median $Abs(AAC)_{t,p}$). We also use this specification in the sensitivity tests described below:

$$\begin{aligned} Abs(AAC) = {} & \beta_0 + \beta_1 StagBoard + \beta_2 OutsideDir51\% + \beta_3 AudComBlock + \beta_4 OutsideDir51\% \\ & + \beta_5 M/B + \beta_6 Abs(\Delta NI) + \beta_7 NegNI + \beta_8 Leverage + \beta_9 Log(Assets) \\ & + \beta_{10} StdDev(CFO) + \varepsilon. \end{aligned} \tag{3}$$

In addition to the different dependent variable, this specification includes $StdDev(CFO)$, the standard deviation of past operating cash flows, to control for expected operating volatility and mitigate the risk of over-rejecting the null hypothesis of no earnings management (Hribar and Nichols 2007). Compared with Klein (2002), an advantage of this specification is that $StdDev(CFO)$ is estimated over a five-year period, which allows us to draw inferences from a larger, more representative sample of firms.

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[5] Klein (2002) does not include year dummies in the model. As a robustness check, we perform a sensitivity test by including a set of year dummies to control for fixed differences across calendar years. The results remain essentially unchanged (untabulated).

If the estimated coefficient β_1 on *StagBoard* from these models is significantly positive (negative), we interpret this as evidence that staggered boards are associated with more (less) earnings management.

IV. SAMPLE SELECTION

Selection of Fraud Firms

Our selection procedure starts with examining SEC Accounting and Auditing Enforcement Releases (AAERs) issued between November 2, 1995, and June 30, 2006.[6] These releases describe the SEC's investigations of alleged violations of accounting provisions of the securities laws by firms and/or their employees. We eliminate first the cases where violations were committed by broker-dealers, mutual funds or hedge funds, cases that involved violations of the Foreign Corrupt Practices Act (FCPA), and cases of delinquent filing because these types of cases are not relevant to the subject of this study.

We further narrow the sample of violation cases to those with starting dates ranging between January 1, 1995, and December 31, 2001. The selection of January 1, 1995, as the starting point is to ensure that the legal rules making staggered boards powerful were already in place at the time earnings management occurred.[7] The December 31, 2001 cutoff date is to avoid the confounding effects of the post-Enron environment and subsequent reform measures such as the Sarbanes-Oxley Act and other regulatory actions on managers' inclinations or opportunities to manipulate earnings (Myers et al. 2004).[8]

We also exclude the following: (1) foreign firms, because these firms are likely subject to different corporate governances and regulations; (2) firms not in the Compustat or CRSP databases and firms with no proxy statement filed within a year prior to the first occurrence of violations; (3) violation cases in which the AAERs fail to identify the responsible party or the responsible party was the auditor or a non-top-executive employee (e.g., a subsidiary or division manager), since the underlying theories of this study concern the reporting behavior of top executives; (4) firms without the word "fraud" or similar words (e.g., "fraudulent," "defraud," and "antifraud") in the AAERs, since not all cases involve fraudulent reporting issues (Feroz et al. 1991; Erickson et al. 2006); and (5) firms with missing data for any of the variables included in the models.

To minimize simultaneity of the board election mechanism and financial reporting fraud, we also ensure that no sample firms switched between staggered and unitary boards immediately prior to the first occurrence of fraud. No fraud firm, however, is eliminated at this step because none of the remaining fraud firms altered its board election mechanism during the two years preceding the first alleged fraud.

These criteria produce a final sample of 83 fraud firms. Table 2, Panel A summarizes the sample selection procedure.

Selection of Control Firms

Following prior matched-pairs studies (e.g., Erickson et al. 2006), we select two control firms not accused of accounting violations by the SEC for each fraud firm, matched in size, industry, and time period. Following Farber (2005), we use net sales as the proxy for firm size, as measured by

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[6] The earliest AAER available on the SEC's website is dated November 2, 1995.

[7] According to Subramanian (2004), these legal rules were in place by the mid-1990s. Examining the association between staggered boards and firm value, Bebchuk and Cohen (2005) and Faleye (2007) also use 1995 as the starting point of their sample periods.

[8] Cutting off in 2001 also allows us to have additional years to ensure no misclassifications of the selected no-fraud control firms, since the SEC needs time to take action. In addition, the SEC may not begin to investigate events that occurred during the sample period until long after the period.

TABLE 2
Sample Selection Procedures

Panel A: Selection Procedure for Fraud Firms

Criteria		Firms
Total number of firms with AAERs issued between 11/02/1995 and 06/30/2006 (non-duplicates)[a]		558
Less:	Broker-dealers, mutual funds or hedge funds, FCPA cases, or delinquent filers[b]	−47
	Violations started before 01/01/1995	−143
	Violations started after 12/31/2001	−21
	Foreign firms	−20
	Not in Compustat or CRSP, no Proxy statements	−120
	Violations committed by unspecified parties or by non-top-executives	−64
	Violation cases without "fraud" or its variants	−14
	Missing variables	−46
Final sample of fraud firms		83

Panel B: Selection Procedure for Large-Sample Test

Criteria		Firm-years
Firm-years with non-missing data on staggered boards, poison pills and governance index, 1995–2001		12,376
Less:	Missing board and audit committee composition data (IRRC Director)	−2,134
	Missing data on ExecuComp executive ownership	−1,673
	SIC codes 6000–6199, 6300–6411, and 6798	−938
	Missing Compustat data on financial control variables	−470
	Missing data for the Jones (1991) model	−27
	Missing 10-year accrual data necessary to compute accrual volatility	−1,726
	Missing data on other board characteristics	−252
	Missing data on blockholder ownership	−839
	Outlier for accrual	−25
Final sample		4,292

[a] The earliest AAER available on the SEC's website is dated November 2, 1995. The cutoff date for manually collecting fraud data from AAERs is June 30, 2006.

[b] FCPA refers to the Foreign Corrupt Practices Act.

net sales for the year prior to the first alleged fraud. The industry is defined by its two-digit Standard Industrial Classification (SIC) code, an approach used in several prior studies (Beneish 1999; Agrawal and Chadha 2005; Erickson et al. 2006).

The two firms closest to the fraud firm to be matched in size are used as the control firms, provided that (1) both the proxy and financial statement data of the control firm are available for the same time period as the data for the matched fraud firm, (2) the control firm was active and incorporated in the U.S. during the corresponding fraud period, (3) the control firm was not a subsidiary of another firm, (4) the control firm did not have a staggered board other than a three-class board,[9] and (5) consistent with the fraud sample, the control firm did not alter its board election mechanism within the two years prior to the corresponding fraud. Failure to meet any one of these conditions disqualifies the firm, and the next closest firm in size is examined for qualification as the matching firm.

Selection of Firms for Large-Sample Tests

We use 1995–2001, the same time period as in the fraud analysis, for the unexpected accruals analysis. Table 2, Panel B summarizes the sample selection procedure. We begin with retrieving data on staggered boards, poison pills, and state of incorporation from the IRRC Corporate Governance database, and the Governance Index data from the data set compiled by Gompers et al. (2003).[10] To construct Klein's (2002) governance controls, we then use the Investor Responsibility Research Center (IRRC) Directors database for data on board and audit committee composition, and the Standard & Poor's ExecuComp database for data on executive ownership. We exclude firm-years with missing data on any of the variables. These databases, which focus largely on the constituents of the S&P 1,500 index, likely limit our analyses to those larger, more successful firms.

Following Klein (2002), we delete financial firms such as banks and insurance companies (SIC codes 6000–6199 and 6300–6411, respectively) because accruals and unexpected accruals are difficult to define for firms in these industries. We also eliminate real estate investment trusts (SIC code 6798) from the sample, since such firms have various legal requirements that limit managerial discretion (Bebchuk and Cohen 2005).

We use Compustat to construct Klein's (2002) measures of absolute unexpected accruals and financial controls. Note in following Klein (2002), we must have ten-year accrual data to estimate accrual volatility, which further eliminates firms that tend to be younger and less successful. However, as Section V shows, the results are robust to using unadjusted *Abs*(*AAC*) as the dependent variable and analyzing firms with a minimum of five years of operating cash flow data.

As discussed below in Section V, we also examine the relation between firm value and staggered boards using Faleye's (2007) model. Thus, we use the IRRC Director database for data on other board characteristics, and the data set compiled by Dlugosz et al. (2006) for outside blockholder ownership data. We exclude firm-years with missing data on any of these additional variables.

Finally, to mitigate outlier effects, we follow Klein (2002) and remove firm-years with *Abs*(*AAC*) being more than five standard deviations from the mean. After these steps, the final sample consists of 4,292 firm-year observations.[11] The number of firms in this sample is approximately 613 observations per year, which is greater than Klein's (2002) sample of 346 observations per year.

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[9] A typical staggered board has three classes, although a small portion of firms have two-, four-, or even five-class staggered boards. All of our sample fraud firms with staggered boards turned out to have three-class staggered boards. To ensure homogeneity, we do not include firms with other types of staggered boards when selecting control firms. However, the results remain essentially unchanged when we relax this restriction and include eight control firms with two- or four-class staggered boards in the final sample.

[10] Both the IRRC Corporate Governance database and the dataset compiled by Gompers et al. (2003) are based on *Corporate Takeover Defenses*, published by the IRRC in 1995, 1998, 2000, and 2002 during our sample period. Each volume is based on a firm's proxy materials filed in the preceding calendar year and therefore the data are available for 1994, 1997, 1999, and 2001. Following Bebchuk and Cohen (2005), we fill in missing years by assuming that the data from any given calendar year's proxy statement remain unchanged in the following year. In the case of 1996, for which there are no original data in the preceding year (i.e., 1995), we assume that the data in 1996 remain the same as in 1994.

[11] After we implement the procedures, no firms in our final sample are incorporated outside the U.S.

V. EMPIRICAL RESULTS

This section presents descriptive statistics and the results of univariate and multivariate analyses of the firm value test, the fraud test, and the absolute unexpected accruals test.

Descriptive Statistics and Univariate Tests

Table 3, Panel A reports the sample fraud firms by industry. Most of the 23 two-digit industries included in this study have seven fraud cases or less, except the business service industry, which has 27 fraud cases. Table 3, Panel B reports the distribution of fraud cases by the year of their first alleged fraud. Of the years included in this study, 1998 and 2000 have the highest number of fraud cases (19), while 1995 has only two cases.

Table 3, Panel C breaks down the sample fraud firms by the type of manipulation documented in the AAERs. The most oft-seen fraud scheme is overstating revenues (78 percent). Approximately 39 percent of the firms also understated cost of goods sold or other operating expenses. Other often-used methods are manipulations of accounting reserves (22 percent), overstatement of inventory (19 percent), and overstatement of accounts receivables (17 percent). Of the 83 fraud firms, 80 firms overstated reported earnings (96 percent) and the remaining three engaged in false disclosure or misclassification.

Table 3, Panel C breaks down the fraud cases by the position of the top executive involved in the fraud scheme. All fraud cases selected in this study involved CEOs, chief financial officers, or chief operating officers. Chief financial officers were involved in roughly 86 percent of fraudulent schemes, followed by CEOs at 60 percent.

Table 4, Panel A reports means and medians of variables of the fraud and control firms and their differences. Variables in dollars are in millions and all variables are winsorized at the 1 percent and 99 percent levels. The results show that the proportion of fraud firms with staggered boards (*StagBoard*) is significantly lower than that of control firms ($p < 0.05$), which suggests that staggered boards may have a mitigating effect on financial reporting fraud. The differences between the fraud and control samples in the means and medians of both *NetSales* (net sales) and *MVEquity* (market value of common equity) are not significant ($p > 0.95$), indicating success in matching similarly sized firms. In addition, fraud firms are, on average, younger (*FirmAge*), have higher stock return volatility (*StkVolatility*), have higher growth rates (*SalesGrowth*), have more favorable market performance (*TobinsQ*), and have lower capital expenditures (*CapEx/Assets*), which is generally consistent with expectations. In terms of governance features, fraud firms, on average, show weaker governance, such as lower board independence (*OutsideDir51%*) and greater CEO influence on the board (*CEO=Chair*)

Table 4, Panel B reports descriptive statistics for variables in the large-sample tests. The sample firms have a mean of 0.626 for *StagBoard*, suggesting that approximately 63 percent of the sample firms have staggered boards. This result is consistent with the findings of Bebchuk and Cohen (2005) that also examine a similar pool of firms covered by the IRRC. The descriptive statistics of other variables are generally comparable to those in prior studies (e.g., Bebchuk and Cohen 2005; Faleye 2007; Klein 2002).

Tests of Staggered Boards and Firm Value

Bebchuk and Cohen (2005) and Faleye (2007) document that staggered boards are negatively associated with firm value. To confirm that their findings hold in our study, we also examine the association between staggered boards and firm value. Following Chung and Pruitt (1994) and Faleye (2007), we measure firm value (*TobinsQ*) as the ratio of the market value of the firm to the book value of assets at the end of each fiscal year for the large-sample test. In addition, we use Faleye's (2007) model and control for both financial factors and other governance features that

TABLE 3

Classification of Sample Fraud Firms

Panel A: Classification of Sample Fraud Firms—By Industry

Two-Digit Industry	Industry Name	# of Fraud Firms	Percent of Total
13	Oil and Gas Extraction	1	1.20%
16	Heavy Construction, Except Building Construction—Contractors	1	1.20%
23	Apparel, Finished Products from Fabrics, and Similar Materials	3	3.61%
26	Paper and Allied Products	1	1.20%
27	Printing, Publishing, and Allied Industries	2	2.41%
28	Chemicals and Allied Products	3	3.61%
31	Leather and Leather Products	1	1.20%
34	Fabricated Metal Products, Except Machinery and Transport Equipment	1	1.20%
35	Industrial and Commercial Machinery and Computer Equipment	7	8.43%
36	Electronic, Electrical Equipment and Components, Except Computer Equipment	6	7.23%
38	Measuring/Analyzing/Controlling Instruments; Photographic/Medical/Optical Goods; Watches/Clocks	7	8.43%
42	Motor Freight Transportation	1	1.20%
48	Communications	3	3.61%
49	Electric, Gas, and Sanitary Services	2	2.41%
50	Wholesale Trade—Durable Goods	4	4.82%
51	Wholesale Trade—Nondurable Goods	4	4.82%
53	General Merchandise Stores	2	2.41%
56	Apparel and Accessory Stores	1	1.20%
59	Miscellaneous Retail	2	2.41%
64	Insurance Agents, Brokers, and Service	1	1.20%
67	Holding and Other Investment Offices	1	1.20%
73	Business Services	27	32.53%
80	Health Services	2	2.41%
	Total	83	100.00%

(continued on next page)

TABLE 3 (continued)

Panel B: Classification of Sample Fraud Firms—By Year

Calendar Year	# of Fraud Firms	Percent of Total
1995	2	2.41%
1996	8	9.64%
1997	8	9.64%
1998	19	22.89%
1999	14	16.87%
2000	19	22.89%
2001	13	15.66%
Total	83	100.00%

Panel C: Classification of Sample Fraud Firms—By Type

Fraud Type	# of Fraud Firms	Percent of Total
Overstated Revenues	65	78.31%
Understated Expenses or Costs	32	38.55%
Improper Capitalization of Expenses	5	6.02%
Merger Accounting Related Manipulation	1	1.20%
Overstated Long-Term Assets	11	13.25%
Overstated Inventory	16	19.28%
Overstated Accounts Receivable	14	16.87%
Improper Lease Accounting	2	2.41%
Understated Debt	8	9.64%
Overstated Cash Flows	7	8.43%
Manipulating Accounting Reserves	18	21.69%
Inappropriate Related Party Transactions	4	4.82%
Overstated Earnings	80	96.39%
Materially False Disclosure or Misclassification	3	3.61%
Total	83	100.00%

(continued on next page)

TABLE 3 (continued)

Panel D: Classification of Sample Fraud Firms—By Position of Responsibility Party

Top Executives Involved in Fraud	**# of Fraud Firms**	**Percent of Total**
Chief Executive Officer	50	60.24%
Chief Operating Officer or President	38	45.78%
Chief Financial Officer	71	85.54%
Total	83	100.00%

likely affect firm value. For the small-sample tests of fraudulent reporting, to avoid the potential confounding effect of fraudulent reporting on market valuation and *TobinsQ*, we measure *TobinsQ* and all of the control variables at the fiscal year-end immediately prior to the first fraud year. All of these variables are defined in detail in Table 1. We also include a set of two-digit SIC code dummies and year dummies to control for industry- and year-specific characteristics. The model for the firm value test is as follows:

$$\begin{aligned} TobinsQ = {} & \beta_0 + \beta_1 StagBoard + \beta_2 \#Directors + \beta_3 OutsideDir51\% + \beta_4 InsidersOwnI\% \\ & + \beta_5 InsidersOwnII\% + \beta_6 InsidersOwnIII\% + \beta_7 BlockOwn\% + \beta_8 CEO{=}Chair \\ & + \beta_9 \#Dirships + \beta_{10} DirAge + \beta_{11} IndepNomCom + \beta_{12} DelawareInc \\ & + \beta_{13} PoisonPill + \beta_{14} CapEx/Assets + \beta_{15} Leverage + \beta_{16} Log(Assets) \\ & + \beta_{17} OperProfit + \text{industry dummies} + \text{year dummies} + \varepsilon. \end{aligned} \tag{4}$$

As shown in columns 1 and 2 of Table 5, neither the fraud sample nor the control sample shows a significant association between *StagBoard* and *TobinsQ*. However, these results are likely caused by the considerable variation of *TobinsQ* across various industries in the small-sample tests.[12] Column 3 shows the results of the large-sample test, where we use Huber-White sandwich standard errors to account for the potential autocorrelation in the pooled cross-sectional test. The coefficient on *StagBoard* in the large-sample test is negative and significant at $p < 0.05$. Thus, consistent with Bebchuk and Cohen (2005) and Faleye (2007), the results suggest that staggered boards entrench managers and impair firm value.

The signs of the coefficients on several control variables are consistent with the findings of the large-sample tests by Faleye (2007). Specifically, in column 3, firm value (*TobinsQ*) is positively associated with operating profitability (*OperProfit*), but negatively associated with average director age (*DirAge*), financial leverage (*Leverage*), and high insider ownership (*InsidersOwnIII%*).

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[12] The standard deviations of *TobinsQ* for the fraud sample, the control sample, and the large sample are 4.411, 2.724, and 1.200, respectively. Thus, we follow Servaes (1991) and create a dummy variable *HighLowQ* (1 for firms with Tobin's Q larger than 1 or larger than the firm's industry median in the same period, and 0 otherwise) to obtain an industry-adjusted Tobin's Q. We find that staggered boards are negatively associated with *HighLowQ* in the fraud sample, significant at $p < 0.1$ (untabulated).

TABLE 4
Descriptive Statistics

Panel A: Comparing Fraud and No-Fraud Control Firms

	Fraud Firms		**Control Firms**		**Difference (Fraud−Control)**	
Variables	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
StagBoard	0.379	0.000	0.533	1.000	−0.155**	−1.000**
Leverage	0.152	0.054	0.144	0.077	0.007	−0.023
AltmansZ	5.341	5.249	5.809	5.035	−0.469	0.214
SalesGrowth	0.879	0.358	0.286	0.153	0.593**	0.204***
FirmAge	1.667	1.717	2.129	2.141	−0.461***	−0.424**
Financing	0.061	0.000	0.089	0.000	−0.028	0.000
B/M	0.536	0.492	0.614	0.555	−0.078	−0.063
ROA	−0.026	0.026	0.002	0.047	−0.028	−0.022*
E/P	−0.033	0.017	−0.026	0.036	−0.006	−0.019**
M&AFraudYear	0.197	0.000	0.185	0.000	0.012	0.000
StkVolatility	0.197	0.176	0.160	0.149	0.037**	0.027**
MVEquity	3846.444	324.727	3324.862	222.651	521.582	102.076
NetSales	1763.486	134.280	2130.089	160.663	−366.603	−26.383
OutsideDir51%	0.606	1.000	0.748	1.000	−0.142**	0.000**
#BoardMeet	7.030	6.500	6.467	6.000	0.564	0.500
CEO=Chair	0.758	1.000	0.615	1.000	0.143**	0.000**
CEOTenure	7.188	5.000	7.059	5.000	0.129	0.000
InsidersOwn%	0.231	0.184	0.219	0.167	0.013	0.016
DelawareInc	0.636	1.000	0.570	1.000	0.066	0.000
PoisonPill	0.242	0.000	0.363	0.000	−0.121*	0.000*
DualMajorityOwn	0.167	0.000	0.104	0.000	0.063	0.000
%OutsideDir	0.596	0.600	0.646	0.667	−0.050**	−0.067**
TobinsQ	2.157	1.364	1.680	1.222	0.477*	0.141
Log(Assets)	5.459	5.328	5.366	4.860	0.093	0.468
CapEx/Assets	0.051	0.045	0.062	0.045	−0.011*	0.000
OperProfit	0.044	0.081	0.063	0.087	−0.019	−0.005
BlockOwn%	0.105	0.071	0.112	0.076	−0.007	−0.005
DirTenure	6.033	5.450	8.057	7.500	−2.025***	−2.050***
#Directors	7.152	7.000	7.800	7.000	−0.648*	0.000*
DirAge	54.122	54.388	55.839	56.500	−1.717**	−2.113**
#Dirships	1.352	1.429	1.417	1.273	−0.066	0.156
IndepNomCom	0.864	1.000	0.859	1.000	0.004	0.000

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*, **, *** Significance at 10 percent, 5 percent and 1 percent confidence levels, respectively, for two-tailed tests.

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TABLE 4 (continued)

StagBoard = dummy variable with a value of 1 if the firm has a staggered board in year $t-1$, and 0 otherwise;
Leverage = ratio of long-term debt (#9) to total assets (#6) at the end of year $t-1$;
AltmansZ = Altman's (1968) Z-score in year $t-1$ as updated by Begley et al. (1996), where Altman's Z-score $= 10.4X_1 + 1.0X_2 + 10.6X_3 + 0.3X_4 - 0.17X_5$, with X_1 = working capital/total assets, X_2 = retained earnings/total assets, X_3 = earnings before interest and taxes/total assets, X_4 = market equity/total liabilities and X_5 = sales/total assets;
SalesGrowth = percentage change in net sales (#12) from year $t-2$ to year $t-1$;
FirmAge = difference between the starting date of the firm (*ST_DATE* in CRSP) and the end of year $t-1$, measured in years;
Financing = dummy variable with a value of 1 if the firm's free cash in year t ($FREECASH_t$) is less than 0.5, and 0 otherwise, where $FREECASH_t$= {Operating Cash Flow_t(#308) – Average Capital $\text{Expenditures}_{t-3 \text{ to } t-1}$(#128)} / Current Assets_{t-1}(#4);
B/M = ratio of the book value of assets (#6) to the market value of the total firm, measured at the end of year $t-1$;
ROA = ratio of net income (#172) in year $t-1$ to total assets (#6) at the end of year $t-1$;
E/P = ratio of net income per share (#172/#25) in year $t-1$ to stock price (#199) at the end of year $t-1$;
M&AFraudYear = dummy variable with a value of 1 if the firm had an acquisition that contributed to sales (i.e., #249 > 0) in year t, and 0 otherwise;
StkVolatility = standard deviation of stock returns over 60 months prior to the end of year $t-1$;
MVEquity = market value of common equity (#199 * #25) at the end of year $t-1$, restated into a constant dollar of 1995 using the Consumer Price Index;
NetSales = net sales (#12) in year $t-1$;
OutsideDir51% = dummy variable with a value of 1 if the board has at least a majority of independent directors in year $t-1$, and 0 otherwise, where independent directors refer to outside directors who are not affiliated with the firm;
#BoardMeet = number of board meetings held during year $t-1$;
CEO=Chair = dummy variable with a value of 1 if the CEO chairs the board in year $t-1$, and 0 otherwise;
CEOTenure = number of years that the CEO has served as a CEO of the firm as of year $t-1$;
InsidersOwn% = percentage of ownership by all insiders (executives and directors) in year $t-1$;
DelawareInc = dummy variable with a value of 1 if the firm is incorporated in Delaware in year $t-1$, and 0 otherwise;
PoisonPill = dummy variable with a value of 1 if the firm has a poison pill in year $t-1$, and 0 otherwise;
DualMajorityOwn = dummy variable with a value of 1 if the firm has a dual-class voting stock or a majority of the firm's stock is in the hands of insiders, and 0 otherwise;
%OutsideDir = percentage of independent directors on the board in year $t-1$;
TobinsQ = ratio of the market value of the total firm to the book value of assets (#6) at the end of year $t-1$, where the market value of the total firm is measured as the sum of the market value of common equity (#199 * #25), the liquidating value of preferred stock (#10), the value of current liabilities net of current assets (#5 – #4), and the book value of long-term debt (#9) (Chung and Pruitt 1994);
Log(Assets) = natural log of total assets (#6) at the end of year $t-1$, restated into a constant dollar of 1995 using the Consumer Price Index;
CapEx/Assets = ratio of capital expenditures (#128) to total assets (#6) in year $t-1$;
OperProfit = ratio of operating income (#178) to total assets (#6) in year $t-1$;
BlockOwn% = percentage of ownership by outside blockholders not affiliated with the firm as an officer or director, or with an affiliated entity or the Employee Share Ownership Plans in year $t-1$;
DirTenure = average tenure of directors as of year $t-1$;
#Directors = number of directors serving on the board in year $t-1$;
DirAge = average age of directors as of year $t-1$;
#Dirships = average number of other boards on which directors serve in year $t-1$;
IndepNomCom = dummy variable with a value of 1 if the firm has a nominating committee of which the CEO is not a member in year $t-1$, and 0 otherwise; and
t = fiscal year in which the fraud initially occurs.

(continued on next page)

TABLE 4 (continued)

Panel B: Large-Sample Tests (n = 4,292)

Variable	First Quartile	Mean	Median	Third Quartile	Standard Deviation
StagBoard	0.000	0.626	1.000	1.000	0.484
UnexpectedAcc	−0.022	0.019	−0.003	0.031	0.092
Abs(*UnexpectedAcc*)	0.011	0.047	0.025	0.050	0.082
OutsideDir51%	1.000	0.767	1.000	1.000	0.423
%OutsideDir	0.545	0.643	0.667	0.778	0.175
AudComOutsideDir51%	1.000	0.886	1.000	1.000	0.318
%AudComOutsideDir	0.667	0.841	1.000	1.000	0.213
AudComBlock	0.000	0.011	0.000	0.000	0.104
CEOOwn%	0.000	0.017	0.000	0.009	0.048
M/B	0.747	1.492	1.038	1.667	1.534
Abs(Δ*NI*)	0.008	0.042	0.020	0.047	0.070
NegNI	0.000	0.039	0.000	0.000	0.193
Leverage	0.105	0.243	0.229	0.339	0.195
Log(*Assets*)	6.290	7.392	7.296	8.416	1.457
TobinsQ	0.732	1.483	1.026	1.659	1.514
#Directors	8.000	10.062	10.000	12.000	2.623
DirAge	57.500	59.522	59.667	61.714	3.357
#Dirships	0.000	0.588	0.300	1.000	0.726
CEO=Chair	0.000	0.715	1.000	1.000	0.452
InsidersOwn%	0.000	0.027	0.000	0.016	0.068
BlockOwn%	0.000	0.146	0.123	0.226	0.136
IndepNomCom	1.000	0.833	1.000	1.000	0.373
DelawareInc	0.000	0.499	0.000	1.000	0.500
PoisonPill	0.000	0.656	1.000	1.000	0.475
OtherGovIndex	8.000	9.252	9.000	11.000	2.388
OperProfit	0.070	0.118	0.109	0.164	0.101
CapEx/Assets	0.038	0.078	0.061	0.096	0.065

StagBoard = dummy variable with a value of 1 if the firm has a staggered board in year *t*−1, and 0 otherwise;

UnexpectedAcc = measured as each firm's *Abs*(*AAC*) minus the median value of *Abs*(*AAC*) for a portfolio of firms matched on the standard deviation of past total accruals, where *Abs*(*AAC*) is the absolute value of the accruals prediction error from a cross-sectional Jones (1991) model estimated for each two-digit SIC industry in year *t* (Klein 2002, 381–386);

Abs(*UnexpectedAcc*) = absolute value of *UnexpectedAcc* in year t;

OutsideDir51% = dummy variable with a value of 1 if the board has at least a majority of independent directors in year *t*−1, and 0 otherwise, where independent directors refer to outside directors who are not affiliated with the firm;

(continued on next page)

TABLE 4 (continued)

%OutsideDir = percentage of independent directors on the board in year $t-1$;
AudComOutsideDir51% = dummy variable with a value of 1 if the firm's audit committee has at least a majority of independent directors in year $t-1$, and 0 otherwise;
%AudComOutsideDir = percentage of independent members on the audit committee in year $t-1$;
AudComBlock = dummy variable with a value of 1 if an outside 5% blockholder sits on the board's audit committee in year $t-1$, and 0 otherwise;
CEOOwn% = percentage of ownership by the CEO in year $t-1$;
M/B = ratio of the market value of the total firm to the book value of assets (#6), measured at the end of year $t-1$;
Abs(Δ*NI*) = absolute value of the change in net income before extraordinary items (#18) between years $t-1$ and t, deflated by total assets (#6) at the end of year $t-1$;
NegNI = dummy variable with a value of 1 if the firm had two or more consecutive years of negative income before extraordinary items (#18) ending on the year $t-1$, and 0 otherwise;
Leverage = ratio of long-term debt (#9) to total assets (#6) at the end of year $t-1$;
Log(Assets) = natural log of total assets (#6) at the end of year $t-1$, restated into a constant dollar of 1995 using the Consumer Price Index;
TobinsQ = ratio of the market value of the total firm to the book value of assets (#6) at the end of year t, where the market value of the total firm is measured as the sum of the market value of common equity (#199 * #25), the liquidating value of preferred stock (#10), the value of current liabilities net of current assets (#5 − #4), and the book value of long-term debt (#9) (Chung and Pruitt 1994);
#Directors = number of directors serving on the board in year $t-1$;
DirAge = average age of directors as of year $t-1$;
#Dirships = average number of other boards on which directors serve in year $t-1$;
CEO=Chair = dummy variable with a value of 1 if the CEO chairs the board in year $t-1$, and 0 otherwise;
InsidersOwn% = percentage of ownership by all insiders (executives and directors) in year $t-1$;
BlockOwn% = percentage of ownership by outside blockholders not affiliated with the firm as an officer or director, or with an affiliated entity or the Employee Share Ownership Plans in year $t-1$;
IndepNomCom = dummy variable with a value of 1 if the firm has a nominating committee of which the CEO is not a member in year $t-1$, and 0 otherwise;
DelawareInc = dummy variable with a value of 1 if the firm is incorporated in Delaware in year $t-1$, and 0 otherwise;
PoisonPill = dummy variable with a value of 1 if the firm has a poison pill in year $t-1$, and 0 otherwise;
OtherGovIndex = number of antitakeover provisions other than staggered boards adopted by the firm in year $t-1$;
OperProfit = ratio of operating income (#178) to total assets (#6) in year $t-1$;
CapEx/Assets = ratio of capital expenditures (#128) to total assets (#6) in year $t-1$; and
t = fiscal year in which earnings management occurs.

In addition, firms with poison pills (*PoisonPill*) have lower *TobinsQ*, suggesting that poison pills impair shareholder wealth. Finally, consistent with Agrawal and Knoeber (1996), *TobinsQ* is negatively associated with *OutsideDir51%*.[13]

As a robustness check, we replace *DelawareInc* and *PoisonPill* with *OtherGovIndex* in the model for the large-sample test to control for the effect of antitakeover provisions other than staggered boards (Bebchuk and Cohen 2005). *StagBoard* remains significantly negatively associated with *TobinsQ*. In addition, *OtherGovIndex* is negatively associated with *TobinsQ*, significant at $p < 0.05$. Consistent with Bebchuk and Cohen (2005), the coefficient on *OtherGovIndex* (−0.026) is substantially smaller than that on *StagBoard* (−0.124) in magnitude (untabulated).

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[13] One possible interpretation is that outside directors are added to boards for political reasons (Agrawal and Knoeber 1996). In addition, numerous studies (e.g., Hermalin and Weisbach 1991; Klein 1998) find no relation between firm performance and the composition of the board.

TABLE 5

Multivariate Models of Firm Value on Staggered Boards and Control Variables: 1995–2001

Variable	Exp. Sign	1 Fraud-Sample Coefficient[a]	2 Control-Sample Coefficient	3 Large-Sample Coefficient[b]
Intercept		5.782	14.306	1.956
		(1.46)	(4.39)***	(3.19)***
StagBoard	?	−0.503	0.397	−0.141
		(−0.71)	(0.85)	(−2.16)**
#Directors	−	0.324	0.087	−0.008
		(1.94)*	(0.75)	(−0.78)
OutsideDir51%	+	−0.162	0.122	−0.103
		(−0.17)	(0.25)	(−2.03)**
InsidersOwnI%	+	43.241	−45.193	0.651
		(1.15)	(−1.83)*	(0.35)
InsidersOwnII%	−	−5.634	−1.646	0.480
		(−0.95)	(−0.44)	(0.41)
InsidersOwnIII%	−	−0.276	1.185	−3.060
		(−0.08)	(0.68)	(−1.85)*
BlockOwn%	?	−5.419	−0.779	−0.097
		(−1.83)*	(−0.47)	(−0.58)
CEO=Chair	−	−0.179	−0.647	0.014
		(−0.27)	(−1.61)	(0.32)
#Dirships	+	0.313	0.110	0.049
		(0.71)	(0.51)	(1.36)
DirAge	−	−0.208	−0.117	−0.019
		(−3.14)***	(−2.73)***	(−1.98)**
IndepNomCom	+	0.306	−0.095	0.016
		(0.33)	(−0.15)	(0.22)
DelawareInc	+	0.499	−0.256	0.042
		(0.68)	(−0.61)	(0.56)
PoisonPill	?	−0.247	0.627	−0.088
		(−0.26)	(1.19)	(−1.83)*
CapEx/Assets	+	1.237	−0.244	−0.219
		(0.21)	(−0.06)	(−0.59)
Leverage	−	−3.441	−3.929	−0.549
		(−1.17)	(−2.96)***	(−2.97)***
Log(Assets)	?	−0.031	−0.375	−0.001
		(−0.13)	(−2.14)**	(−0.02)

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TABLE 5 (continued)

Variable	Exp. Sign	1 Fraud-Sample Coefficient[a]	2 Control-Sample Coefficient	3 Large-Sample Coefficient[b]
OperProfit	+	2.467	4.065	4.172
		(1.35)	(3.11)***	(7.35)***
Sample size		83	166	4,292
Adj. R^2		0.79	0.35	

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*, **, *** Significance at 10 percent, 5 percent, and 1 percent confidence levels, respectively, for two-tailed tests.

[a] The parameters in columns 1 and 2 are estimated using the ordinary least square method. The t-statistics are reported in parentheses.

[b] The parameters in column 3 are estimated using the maximum likelihood method with a Newton-Raphson algorithm. The t-statistics using Huber-White sandwich standard errors are reported in parentheses.

The dependent variable, *TobinsQ*, is the ratio of the market value of the total firm to the book value of assets (#6), measured at the end of year *t* for the large-sample tests and at the end of year *t*–1 for the small-sample tests, where the market value of the total firm is measured as the sum of the market value of common equity (#199 * #25), the liquidating value of preferred stock (#10), the value of current liabilities net of current assets (#5-#4), and the book value of long-term debt (#9) (Chung and Pruitt 1994).

StagBoard = dummy variable with a value of 1 if the firm has a staggered board in year *t*–1 and 0 otherwise;
#Directors = number of directors serving on the board in year *t*–1;
OutsideDir%51 = dummy variable with a value of 1 if the board has at least a majority of independent directors in year *t*–1, and 0 otherwise, where independent directors refer to outside directors who are not affiliated with the firm;
InsidersOwn% = percentage of ownership by all insiders (executives and directors) in year *t*–1;
InsidersOwnI% = *InsidersOwn%* if *InsidersOwn%* < 0.05, and is 0.05 if *InsidersOwn%* ≥ 0.05;
InsidersOwnII% = 0 if *InsidersOwn%* < 0.05, is *InsidersOwn%* minus 0.05 if 0.05≤ *InsidersOwn%* < 0.25, and is 0.20 if *InsidersOwn%* ≥ 0.25;
InsidersOwnIII% = 0 if *InsidersOwn%* < 0.25, and is *InsidersOwn%* minus 0.25 if *InsidersOwn%* ≥ 0.25;
BlockOwn% = percentage of ownership by outside blockholders not affiliated with the firm as an officer or director, or with an affiliated entity or the Employee Share Ownership Plans in year *t*–1;
CEO=Chair = dummy variable with a value of 1 if the CEO chairs the board in year *t*–1 and 0 otherwise;
#Dirships = is the average number of other boards on which directors serve in year *t*–1;
DirAge = average age of directors as of year *t*–1;
IndepNomCom = dummy variable with a value of 1 if the firm has a nominating committee of which the CEO is not a member in year *t*–1, and 0 otherwise;
DelawareInc = dummy variable with a value of 1 if the firm is incorporated in Delaware in year *t*–1, and 0 otherwise;
PoisonPill = dummy variable with a value of 1 if the firm has a poison pill in year *t*–1, and 0 otherwise;
CapEx/Assets = ratio of capital expenditures (#128) to total assets (#6) in year *t*–1;
Leverage = ratio of long-term debt (#9) to total assets (#6) at the end of year *t*–1;
Log(Assets) = natural log of total assets (#6) at the end of year *t*–1, restated into a constant dollar of 1995 using the Consumer Price Index;
OperProfit = ratio of operating income (#178) to total assets (#6) in year *t*–1; and
t = fiscal year in which the fraud initially occurs (small-sample tests) or earnings management occurs (large-sample tests).

The coefficients on industry and year dummy variables are not presented.

Tests of Staggered Boards and Financial Reporting Fraud

Table 6 reports the results of logit regression on three models. Model 1 includes all the control variables of Equation (1) discussed in Section III. The other two models are variants of Model 1. Bebchuk and Cohen (2005) argue that firms with dual-class voting stock or with insiders having majority ownership are likely insulated from takeover markets. Thus, we add the dummy variable *DualMajorityOwn* in Model 2 to isolate the effect of these firms on the results.[14] In addition, it can be argued that members of staggered boards are better able to share strategic knowledge than those of unitary boards, since at least two-thirds of the original staggered board members are retained after each annual election. To address this concern, we include *DirTenure* (the average tenure of board members) in Model 3 as a proxy for board members' experience with the firm and continuity of strategic knowledge, and control for its effect on financial reporting quality.

The coefficient of *StagBoard* is negative and statistically significant at $p < 0.01$ in each of the models, suggesting that firms with staggered boards are less likely to commit financial reporting fraud. We also estimate the economic significance of *StagBoard.*[15] A switch to the staggered board decreases the probability that managers perpetrate fraud by approximately 23 percentage points, suggesting that the impact of staggered boards on earnings manipulation is also economically significant (untabulated).

Bebchuk and Cohen (2005) point out that the board election mechanism rarely changes once adopted. Thus, endogeneity concerns of staggered boards for subsequent events are not likely to be as great as those for other governance characteristics, such as board independence. Nevertheless, factors that lead a firm to have a staggered board may also be among determinants of earnings management. We attempt to mitigate this endogeneity concern by including several control variables that proxy for the determinants of staggered boards, as discussed in Section III. In addition, our sample selection procedure ensures that no firm altered its board election mechanism within the two years prior to the first occurrence of fraud, which should minimize the simultaneity of staggered boards and fraud. Thus, the finding of a negative association between staggered boards and financial reporting fraud is not likely to be a result of the endogeneity of staggered boards.

The signs of control variable coefficients are generally consistent with predictions. Younger firms (*FirmAge*) or firms with greater growth rate (*SalesGrowth*) are more likely to commit fraud, suggesting that these firms are more likely to manipulate earnings (e.g., Erickson et al. 2006). The coefficient on *B/M* is negative and statistically significant, suggesting that firms with more favorable market valuation are more likely to commit fraud. In addition, *Fraud* is negatively associated with *OutsideDir51%* and positively correlated with *CEO=Chair*, supporting the findings of prior studies that weak governance is associated with greater earnings management (e.g., Beasley 1996; Klein 2002). Finally, neither *DirTenure* nor *DualMajorityOwn* is significantly associated with *Fraud.*

We also perform several tests to ensure the robustness of the results reported above (untabulated). As alternative model specifications, we replace *OutsideDir51%* and *#BoardMeet* with *AudComOutsideDir51%* (1 if the firm's audit committee has at least a majority of independent directors, and 0 otherwise) and *#AudComMeet* (the number of audit committee meetings), respectively, to control for the audit committee's composition and monitoring efforts. *StagBoard* remains

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[14] In the full sample of the fraud test, there are 36 firms that have dual stock voting structure or majority ownership by insiders. In addition, Francis et al. (2005) find evidence that dual class firms are associated with worse earnings quality. Thus, the inclusion of *DualMajorityOwn* also helps mitigate the problem of correlated omitted variables.

[15] In estimating marginal effects, we first set all of the explanatory variables to their sample means (or modal value for dummy variables). We then increase each continuous explanatory variable by one standard deviation while altering the values of dummy variables between 0 and 1.

TABLE 6

Multivariate Models of Financial Reporting Fraud on Staggered Boards and Control Variables: 1995–2001

Variable	Exp. Sign	Model 1	Model 2	Model 3
Intercept		0.627	0.610	1.020
		(0.73)	(0.71)	(1.14)
StagBoard	?	−0.966	−0.971	−0.944
		(−2.89)***	(−2.89)***	(−2.78)***
Leverage	?	1.095	1.090	0.906
		(1.07)	(1.06)	(0.86)
AltmansZ	−	−0.014	−0.014	−0.017
		(−0.55)	(−0.54)	(−0.67)
SalesGrowth	+	0.445	0.442	0.438
		(2.43)**	(2.42)**	(2.39)**
FirmAge	−	−0.440	−0.442	−0.336
		(−2.56)**	(−2.57)**	(−1.65)*
Financing	+	−0.526	−0.541	−0.540
		(−0.86)	(−0.87)	(−0.88)
B/M	?	−0.847	−0.835	−0.903
		(−1.72)*	(−1.67)*	(−1.80)*
ROA	?	−0.839	−0.832	−0.645
		(−0.86)	(−0.86)	(−0.67)
E/P	?	1.664	1.661	1.645
		(1.55)	(1.55)	(1.53)
M&AFraudYear	+	0.217	0.212	0.155
		(0.55)	(0.54)	(0.39)
StkVolatility	+	0.364	0.353	0.514
		(0.24)	(0.24)	(0.33)
MVEquity	?	0.000	0.000	0.000
		(1.49)	(1.50)	(1.21)
OutsideDir51%	−	−0.605	−0.609	−0.528
		(−1.76)*	(−1.77)*	(−1.52)
#BoardMeet	?	0.039	0.038	0.033
		(0.93)	(0.92)	(0.79)
CEO=Chair	+	0.842	0.847	0.624
		(2.34)**	(2.35)**	(1.64)*
CEOTenure	+	−0.025	−0.025	−0.003
		(−1.03)	(−1.04)	(−0.09)
BlockOwn%	−	1.085	1.100	0.877
		(0.83)	(0.84)	(0.67)

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TABLE 6 (continued)

Variable	Exp. Sign	Model 1	Model 2	Model 3
InsidersOwn%	–	−1.280	−1.128	−1.383
		(−1.31)	(−0.88)	(−1.39)
DelawareInc	?	0.053	0.057	0.075
		(0.16)	(0.18)	(0.23)
PoisonPill	?	−0.113	−0.109	−0.097
		(−0.29)	(−0.28)	(−0.25)
DualMajorityOwn	?		−0.116	
			(−0.18)	
DirTenure	–			−0.075
				(−1.31)
Sample size		249	249	246
Pseudo R^2		0.25	0.25	0.27
χ^2		49.84***	49.87***	52.13***

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*, **, *** Significance at 10 percent, 5 percent, and 1 percent confidence levels, respectively, for two-tailed tests. The z-statistics are in parentheses.

The dependent variable, *Fraud*, is a dummy variable with a value of 1 if a firm is alleged to have committed financial reporting fraud in year *t*, and 0 otherwise.

StagBoard = dummy variable with a value of 1 if the firm has a staggered board in year *t*–1, and 0 otherwise;
Leverage = ratio of long-term debt (#9) to total assets (#6) at the end of year *t*–1;
AltmansZ = Altman's (1968) Z-score in year *t*–1 as updated by Begley et al. (1996), where Altman's Z-score $= 10.4X_1 + 1.0X_2 + 10.6X_3 + 0.3X_4 - 0.17X_5$, with X_1 = working capital/total assets, X_2 = retained earnings/total assets, X_3 = earnings before interest and taxes/total assets, X_4 = market equity/total liabilities and X_5 = sales / total assets;
SalesGrowth = percentage change in net sales (#12) from year *t*–2 to year *t*–1;
FirmAge = difference between the starting date of the firm (*ST_DATE* in CRSP) and the end of year *t*–1, measured in years;
Financing = dummy variable with a value of 1 if the firm's free cash in year *t* ($FREECASH_t$) is less than 0.5, and 0 otherwise, where $FREECASH_t$ = {Operating Cash Flow_t(#308) – Average Capital $\text{Expenditures}_{t-3\text{ to }t-1}$(#128)} / Current Assets_{t-1}(#4);
B/M = ratio of the book value of assets (#6) to the market value of the total firm, measured at the end of year *t*–1;
ROA = ratio of net income (#172) in year *t*–1 to total assets (#6) at the end of year *t*–1;
E/P = ratio of net income per share (#172 / #25) in year *t*–1 to stock price (#199) at the end of year *t*–1;
M&AFraudYear = dummy variable with a value of 1 if the firm had an acquisition that contributed to sales (i.e., #249 > 0) in year *t*, and 0 otherwise;
StkVolatility = standard deviation of stock returns over 60 months prior to the end of year *t*–1;
MVEquity = market value of common equity (#199 * #25) at the end of year *t*–1, restated into a constant dollar of 1995 using the Consumer Price Index;
OutsideDir51% = dummy variable with a value of 1 if the board has at least a majority of independent directors in year *t*–1, and 0 otherwise, where independent directors refer to outside directors who are not affiliated with the firm;
#BoardMeet = number of board meetings held during year *t*–1;
CEO=Chair = dummy variable with a value of 1 if the CEO chairs the board in year *t*–1, and 0 otherwise;
CEOTenure = number of years that the CEO has served as a CEO of the firm as of year *t*–1;

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TABLE 6 (continued)

BlockOwn% = percentage of ownership by outside blockholders not affiliated with the firm as an officer or director, or with an affiliated entity or the Employee Share Ownership Plans in year $t-1$;
InsidersOwn% = percentage of ownership by all insiders (executives and directors) in year $t-1$;
DelawareInc = dummy variable with a value of 1 if the firm is incorporated in Delaware in year $t-1$, and 0 otherwise;
PoisonPill = dummy variable with a value of 1 if the firm has a poison pill in year $t-1$, and 0 otherwise;
DualMajorityOwn = dummy variable with a value of 1 if the firm has a dual-class voting stock or a majority of the firm's stock is in the hands of insiders, and 0 otherwise;
DirTenure = average tenure of directors as of year $t-1$; and
t = fiscal year in which the fraud initially occurs.

negatively associated with *Fraud* at $p < 0.01$. We also find evidence that *AudComOutsideDir51%* is associated with a lower incidence of fraud, consistent with Klein (2002).

Bebchuk and Cohen (2005) point out that a staggered board established in a firm's bylaws is not as effective in protecting incumbent managers as a staggered board established in its charter, because shareholders can typically amend the firm's bylaws at their own initiative, whereas amending the firm's charter requires a board initiative. Thus, following Bebchuk and Cohen (2005), we classify staggered boards into two categories: charter based and bylaws based. We find that charter-based staggered boards are negatively associated with *Fraud* at $p < 0.01$. The coefficient on bylaws-based staggered boards is also negative, though not significant; its magnitude, however, is close to that of charter-based staggered boards.[16]

Tables 3, Panels A and B show that there are concentrations in years (i.e., 1998 and 2000) and industry (i.e., business services) within the fraud sample. Thus, we add to the regressions two dummies, *YearDum* (1 for observations in 1998 or 2000, and 0 otherwise) and *BusDum* (1 for the business services industry, and 0 otherwise) to control for the effects of these concentrations. The coefficient on *StagBoard* remains statistically significant at $p < 0.01$.

Table 3, Panel C shows that there are three firms that did not overstate earnings, but disclosed materially false information or misclassified line items.[17] We eliminate these firms and their corresponding control firms and re-estimate the regressions for the remaining firms. The results remain essentially unchanged.

We also perform a one-to-one case-control match and obtain 83 control firms. The regression results based on the 166 sample firms show that *StagBoard* is negatively associated with *Fraud* at either $p < 0.1$ or $p < 0.05$.

Tests of Staggered Boards and Absolute Unexpected Accruals

The purpose of the absolute unexpected accruals analysis is to examine whether the mitigating effect of staggered boards documented in the fraud analysis is generalizable to earnings management permissible within GAAP. Following Klein (2002), we estimate the regression coefficients by maximum likelihood using a Newton-Raphson algorithm. In addition, all regressions use Huber-White sandwich standard errors to account for the potential autocorrelation.

We first replicate Klein's (2002) tests of board composition and earnings management for the more recent period 1995–2001. As column 1, Table 7, Panel A shows, Klein's (2002) findings of

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[16] Given that there are only a small number of sample firms with bylaws-based staggered boards, the result is likely due to lack of power.

[17] Although these behaviors are not outright earnings manipulation, they likely affect the market's expectation of the firms' future earnings.

TABLE 7

Multivariate Models of Accruals-Based Earnings Management on Staggered Boards and Control Variables: 1995–2001

Panel A: Dependent Variable: Absolute Unexpected Accruals

Variable	Exp. Sign	Model 1	Model 2	Model 3	Model 4
Intercept		−3.215	−3.152	−3.269	−3.209
		(−24.40)***	(−23.6)***	(−23.80)***	(−20.80)***
StagBoard	?		−0.096	−0.099	−0.107
			(−2.10)**	(−2.11)**	(−2.19)**
OutsideDir51%	−	0.056	0.062	0.063	0.058
		(1.00)	(1.10)	(1.10)	(1.02)
AudComBlock	−	−0.311	−0.322	−0.303	−0.312
		(−1.69)*	(−1.77)*	(−1.71)*	(−1.72)*
CEOOwn%	?	−0.117	−0.102	0.047	−0.066
		(−0.27)	(−0.23)	(0.10)	(−0.15)
M/B	+	0.080	0.078	0.077	0.079
		(6.61)***	(6.47)***	(6.33)***	(6.50)***
Abs(Δ*NI*)	+	3.280	3.242	3.145	3.245
		(10.10)***	(10.00)***	(9.73)***	(10.10)***
NegNI	?	0.116	0.104	0.092	0.106
		(1.08)	(0.96)	(0.86)	(0.98)
Leverage	+	0.135	0.149	0.149	0.145
		(1.28)	(1.41)	(1.41)	(1.37)
Log(*Assets*)	−	−0.126	−0.127	−0.127	−0.128
		(−7.73)***	(−7.79)***	(−7.86)***	(−7.84)***
DelawareInc	?			0.157	
				(3.50)***	
PoisonPill	?			0.067	
				(1.36)	
OtherGovIndex	?				0.008
					(0.75)
Sample size		4,292	4,292	4,292	4,292

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*, **, *** Significance at 10 percent, 5 percent, and 1 percent confidence levels, respectively, for two-tailed tests. The t-statistics using Huber-White sandwich standard errors are reported in parentheses.

The dependent variable, *Abs*(*UnexpectedAcc*), is the absolute value of unexpected accruals in year *t* and is modeled as a lognormal distribution (Klein 2002). The parameters are estimated using the maximum likelihood method with a Newton-Raphson algorithm.

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TABLE 7 (continued)

Panel B: Dependent Variable: Absolute Value of Accruals Prediction Error

Variable	**Exp. Sign**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Intercept		−2.341	−2.297	−2.532	−2.367
		(−17.10)***	(−16.50)***	(−18.00)***	(−15.80)***
StagBoard	?		−0.080	−0.103	−0.099
			(−1.71)*	(−2.21)**	(−2.03)**
OutsideDir51%	−	0.058	0.062	0.051	0.055
		(1.28)	(1.38)	(1.12)	(1.21)
AudComBlock	−	−0.006	−0.013	0.030	−0.002
		(−0.04)	(−0.08)	(0.18)	(−0.01)
CEOOwn%	?	−0.632	−0.653	−0.389	−0.598
		(−1.77)*	(−1.82)*	(−1.08)	(−1.65)*
M/B	?	0.076	0.075	0.074	0.076
		(4.74)***	(4.71)***	(4.70)***	(4.71)***
Abs(Δ*NI*)	+	2.291	2.278	2.180	2.286
		(5.67)***	(5.64)***	(5.58)***	(5.65)***
NegNI	?	0.148	0.144	0.119	0.145
		(1.66)*	(1.61)	(1.34)	(1.63)
Leverage	+	0.010	0.013	−0.002	0.013
		(0.12)	(0.17)	(−0.03)	(0.16)
Log(*Assets*)	−	−0.115	−0.115	−0.115	−0.119
		(−6.46)***	(−6.44)***	(−6.49)***	(−6.56)***
StdDev(*CFO*)	+	0.041	0.042	0.019	0.044
		(0.30)	(0.31)	(0.15)	(0.32)
DelawareInc	?			0.306	
				(6.50)***	
PoisonPill	?			0.153	
				(3.36)***	
OtherGovIndex	?				0.013
					(1.34)
Sample size		6,875	6,875	6,875	6,875

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*, **, *** Significance at 10 percent, 5 percent, and 1 percent levels, respectively, for two-tailed tests. The t-statistics using Huber-White sandwich standard errors are reported in parentheses.

The dependent variable, *Abs*(*AAC*), is the absolute value of the accruals prediction error from a Jones (1991) model estimated for each two-digit SIC industry in year *t* and is modeled as a lognormal distribution. The parameters are estimated using the maximum likelihood method with a Newton-Raphson algorithm.

StagBoard = dummy variable with a value of 1 if the firm has a staggered board in year *t*−1 and 0 otherwise;

(continued on next page)

TABLE 7 (continued)

OutsideDir51% = dummy variable with a value of 1 if the board has at least a majority of independent directors in year $t-1$, and 0 otherwise, where independent directors refer to outside directors who are not affiliated with the firm;
AudComBlock = dummy variable with a value of 1 if an outside 5% blockholder sits on the board's audit committee in year $t-1$, and 0 otherwise;
CEOOwn% = percentage of ownership by the CEO in year $t-1$;
M/B = ratio of the market value of the total firm to the book value of assets (#6), measured at the end of year $t-1$;
Abs(Δ*NI*) = absolute value of the change in net income before extraordinary items (#18) between years $t-1$ and t, deflated by total assets (#6) at the end of year $t-1$;
NegNI = dummy variable with a value of 1 if the firm had two or more consecutive years of negative income before extraordinary items (#18) ending on the year $t-1$, and 0 otherwise;
Leverage = ratio of long-term debt (#9) to total assets (#6) at the end of year $t-1$;
Log(*Assets*) = natural log of total assets (#6) at the end of year $t-1$, restated into a constant dollar of 1995 using the Consumer Price Index;
StdDev(*CFO*) = standard deviation of operating cash flows (#308, deflated by lagged total assets, #6) over the five-year period from year $t-4$ to year t;
DelawareInc = dummy variable with a value of 1 if the firm is incorporated in Delaware in year $t-1$, and 0 otherwise;
PoisonPill = dummy variable with a value of 1 if the firm has a poison pill in year $t-1$, and 0 otherwise;
OtherGovIndex = number of antitakeover provisions other than staggered boards adopted by the firm in year $t-1$; and
t = fiscal year in which earnings management occurs.

the negative association between *OutsideDir51%* and earnings management do not hold for our sample firms over the period 1995–2001. We also replace *OutsideDir51%* with *%OutsideDir* (the percentage of independent directors on the board), *%AudComOutsideDir* (the percentage of independent members on the audit committee), and *AudComOutsideDir51%*. Still, the associations between these variables and *Abs*(*UnexpectedAcc*) are not significant (untabulated). The results may be driven by the data from the period 1998–2001, because in 1998 the SEC called for improving the effectiveness of corporate audit committees in overseeing the financial reporting process, and in 1999 the NYSE and NASDAQ began to require all members of audit committees to be independent of management and the company that they serve (Klein 2002).[18]

In column 2, Table 7, Panel A, we add *StagBoard* to Klein's (2002) model. Following Faleye (2007) and Bebchuk and Cohen (2005), we further add either *DelawareInc* and *PoisonPill* or *OtherGovIndex* in columns 3 and 4 to control for the effect of other antitakeover devices. In all three specifications, the coefficient on *StagBoard* is negative and statistically significant at $p < 0.05$, a result consistent with that of the fraud test and suggesting that staggered boards mitigate earnings management and improve earnings quality. Note that the regression result using the same large sample reported above also shows that staggered boards are associated with lower firm value, consistent with staggered boards entrenching managers and impairing firm performance. Thus, one probable interpretation of these results is that, by deterring takeover attempts and enabling managers to enjoy the quiet life, staggered boards not only lessen incentives to perform, but also mitigate incentives to engage in earnings management that either disguises wealth extraction or diminishes takeover threats.

The positive coefficient on *DelawareInc* ($p < 0.01$) is an interesting result. Prior studies (e.g.,

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[18] The sample of Klein (2002) covers the period 1992–1993. After partitioning our sample into two subsamples with 1998 as the cutoff year, we find that *AudComOutsideDir51%* is negatively associated with earnings management for the early period 1995–1997 ($p < 0.1$). But for the later period 1998–2001, there is no significant association between earnings management and various proxies for audit committee composition.

Daines 2001; Faleye 2007) suggest that Delaware firms have stronger governance than firms incorporated elsewhere. Daines (2001), however, also documents that Delaware firms are significantly more likely to be acquired. Thus, the finding of a positive association between Delaware incorporation and earnings management is also consistent with takeover threats inducing earnings management.

Among other control variables, *Abs*(*UnexpectedAcc*) is negatively associated with *AudComBlock* and *Log*(*Assets*), and positively associated with *Abs*(Δ*NI*) and *M*/*B* in all the models, which is generally consistent with the findings of Klein (2002) and other studies.

To minimize simultaneity concerns, we run an additional test restricting the analysis to firms that went public prior to 1990. According to Bebchuk and Cohen (2005), these firms rarely changed their board election mechanism during the 1990s because, during those years, shareholders of unitary board firms were unwilling to adopt staggered board structures, while management of staggered board firms commonly ignored shareholder resolutions in favor of declassifying staggered boards. Thus, for firms that went public prior to 1990, whether they had a staggered board during the sample period does not reflect contemporaneous decisions by management, but depends largely on the firms' initial condition. The regressions based on these firms yield essentially unchanged results (untabulated), suggesting that simultaneity is not a concern.

To the extent that some early fixed factors of a company lead to staggered board status and subsequently lower earnings management, our results are biased. Using an approach similar to Bebchuk and Cohen (2005), we include three-year-lagged *Abs*(*UnexpectedAcc*) as an additional control to mitigate this concern. The coefficient on the lagged earnings management is significantly positive. The other results of the test, however, are similar to those reported in Table 7, Panel A, with *StagBoard* remaining negatively associated with earnings management at $p < 0.1$ (untabulated).

As another robustness check, we also examine the relation between staggered boards and the absolute value of the accruals prediction error (*Abs*(*AAC*)) estimated from the Jones (1991) model, since this measure is commonly used as a proxy for earnings management (e.g., Frankel et al. 2002; Bergstresser and Philippon 2006). We estimate the coefficients of Equation (3). As described above, this increases the sample size substantially because it only requires five years of data to compute *StdDev*(*CFO*) rather than ten years to compute *Abs*(*UnexpectedAcc*). As shown in Table 7, Panel B, *StagBoard* is significantly negatively associated with *Abs*(*AAC*) at either $p < 0.05$ or $p < 0.1$. In addition, *Abs*(*AAC*) is positively associated with *M*/*B*, *Abs*(Δ*NI*), and *DelawareInc*, and negatively associated with *Log*(*Assets*), consistent with Table 7, Panel A. In this specification, *AudComBlock* loses significance, and the coefficient on *CEOOwn%* becomes significantly negative for three models ($p < 0.1$). This latter result is inconsistent with Klein (2002), but is consistent with managerial ownership mitigating earnings management (Warfield et al. 1995). In this specification, *PoisonPill* is positively associated with the proxy for earnings management, suggesting that either poison pills or the factors underlying the presence of a poison pill impair earnings quality.[19] Finally, the coefficient on *StdDev*(*CFO*), though positive, is insignificant in all the models.

As an alternative model specification, we also examine the association between staggered boards and earnings management using the same set of control variables as those of the fraud model. The coefficient on *StagBoard* remains negative and statistically significant at $p < 0.05$ (untabulated).

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[19] Since a poison pill can be adopted in a board meeting without the approval of shareholders, the presence or absence of a poison pill does not affect the takeover vulnerability of a firm (Coates 2000; Bebchuk and Cohen 2005). Therefore, the documented association between poison pills and earnings management likely reflects the effect on earnings management of the factors underlying the presence of a poison pill, instead of the pill per se.

Implications of Results

Combined, our results contradict the general belief and findings of a positive association between weak governance and earnings management (e.g., Beasley 1996; Klein 2002). Prior studies, including those analyzing international settings (e.g., Fan and Wong 2002; Leuz et al. 2003), generally assume that weak governance exacerbates earnings management intended to conceal managerial expropriation. However, compared to many other jurisdictions, the U.S. has effective legal protection of shareholder interests (Shleifer and Vishny 1997; La Porta et al. 1998). Given that expropriation activities, if uncovered, generally entail severe penalties, weakly governed managers in the U.S. likely prefer to enjoy the quiet life and avoid costly efforts (Bertrand and Mullainathan 2003) rather than expropriate shareholder wealth. In this case, good governance intended to maximize managers' efforts and increase firm performance is likely a double-edged sword, as it may also expose managers to pressures to manipulate reported performance. This is particularly true for external governance from takeover markets, where a temporary market undervaluation would likely lead the firm to be acquired and drive out its incumbent managers. Thus, to lessen takeover threats, less-protected managers, though working harder, may also be motivated to manage earnings.

The quiet life view also explains findings of several prior studies. For example, the finding by Warfield et al. (1995) of lower earnings management as insider ownership increases is consistent with a quiet life effect, because higher insider ownership generally entrenches managers (Morck et al. 1988) as well as mitigates takeover threats (Cheng et al. 2005).[20] Future studies need to incorporate this quiet life view into their analysis to produce a clear picture of the association between corporate governance and earnings management.

VI. SUMMARY AND CONCLUSIONS

Recent finance studies suggest that staggered boards entrench managers and impair firm values (Bebchuk and Cohen 2005; Faleye 2007). As an extension of these studies, we examine the association between staggered boards and earnings management. Two competing views on the preferences of entrenched managers suggest contradictory effects of staggered boards on earnings management. The expropriation view expects staggered boards to encourage managers' expropriation activities, which, in turn, raises managers' incentives to manage earnings in order to disguise ill-gained private benefits and reduce the likelihood of being detected. In contrast, the quiet life view argues that entrenched managers prefer to avoid costly efforts and enjoy the quiet life rather than expropriate shareholder wealth. Staggered boards lessen takeover pressures on managers and, as a consequence, reduce their incentives to engage in earnings management.

To address this issue, we adopt two approaches. First, we identify all firms accused by the SEC of having committed fraud between 1995 and 2001 and use a matched-pairs design to compare the differences between fraud and control (no-fraud) firms. We find that staggered boards are significantly associated with a lower likelihood of financial reporting fraud, suggesting that staggered boards mitigate earnings management that violates GAAP. Second, we examine the association between staggered boards and absolute unexpected accruals for a large sample of firms during the period 1995–2001. The results show the mitigating effect of staggered boards to be applicable to earnings management permissible within GAAP. In addition, consistent with Bebchuk and Cohen (2005) and Faleye (2007), we find that the negative association between staggered boards and Tobin's Q holds in the large sample, which confirms previous findings that staggered boards entrench managers and impair firm performance.

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[20] The negative association between financial leverage and earnings management, documented by recent studies (e.g., Frankel et al. 2002; Cheng and Warfield 2005; Wang 2006) but remaining unexplained, is also consistent with a quiet life effect, because higher financial leverage eases takeover pressures (e.g., Garvey and Hanka 1999).

A primary contribution of this study is that, in contrast to prior studies that have generally hypothesized and found a positive relation between weak governance and earnings management, we find that staggered boards, as a type of weak governance, are negatively associated with earnings management. The evidence indicates that, in a U.S. setting where managers likely prefer the quiet life to the expropriation of shareholder wealth, staggered boards may reduce the motivation of managers to manage earnings. However, they also enable managers to enjoy the quiet life—meaning avoiding efforts to increase shareholder wealth—which is then reflected in lower firm value, as documented by Bebchuk and Cohen (2005) and Faleye (2007) and confirmed in this study. Thus, good governance intended to maximize managers' efforts and increase shareholder value may also expose managers to pressures for earnings management. Regulators and shareholders should be aware of this trade-off when considering reforms for good governance, such as declassifying staggered boards.

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BOOK REVIEW

Stephen A. Zeff, Editor

Editor's note: Two copies of books for review should be sent to the Book Review Editor: Stephen A. Zeff, Rice University, Jesse H. Jones Graduate School of Management, 6100 Main St., Houston, TX 77005. The policy of *The Accounting Review* is to publish only those reviews solicited by the Book Review Editor. Unsolicited reviews will not be accepted.

Accounting for Sustainability, Prince of Wales' Accounting for Sustainability Project [2007] (downloadable at http://www.sustainabilityatwork.org.uk, pp. 47).

Accounting for Sustainability is a report from the Prince of Wales' Accounting for Sustainability Project. The goal of the project is "to provide practical guidance and tools to help ensure that sustainability is not just talked about but becomes an integral part of organisations' day-to-day operations" (p. 4). Rather than a stand-alone product, the report is better viewed as an introduction to materials available on the website: http:www.sustainabilityatwork.org.uk. The website provides a more detailed presentation of ideas introduced in the report, as well as numerous links to sustainability resources from outside of the Project (but primarily from the U.K.).

The report is broken down into two major sections: (1) embedding sustainability within the organization; and (2) reporting sustainability. The first section adapts basic management concepts for integrating sustainability into an organization. For example, the notions that sustainability must have top management support must be integrated into the company's main strategy, and that the connection between sustainability measures and corporate performance must be understood and communicated are no different from requirements to successfully incorporate any initiative into a company's strategy. The report presents a very balanced approach to sustainability. Rather than advocating complete adoption of all aspects of sustainability, which would be unrealistic, the report urges companies to focus on those areas that are most important to major stakeholders and to consider resource limitations. This restraint in presentation of sustainability concepts and methods makes it more likely that companies will consider adopting more sustainable practices.

The second section of the report proposes a "connected reporting framework" for external reporting. The basic idea is that, currently, companies separate the reporting of financial and sustainability information. Financial reports are mandatory and are produced under the appropriate GAAP, and sustainability reports are voluntary and do not follow a specified format. This makes it difficult for investors and other stakeholders to link sustainability issues to financial performance. The report recognizes, however, that it is difficult to develop a single reporting standard for sustainability that can accommodate varying information needs across organizations and industries. Instead, the framework promotes the reporting of five environmental indicators across all organizations (polluting emissions, waste, water usage, energy usage, and the significant use of other finite resources), with additional metrics tailored to the specific organization or industry. The focus on environmental aspects of sustainability is due to the more mature development of measures in that area. To become more complete, similar measures will need to be developed for other sustainability aspects.

In parallel with the presentation of examples of reports based upon the reporting framework, the report identifies features that will make the reported information more valuable to stakeholders. For example, given the nature of sustainability, the report proposes that information should be reported with financial and nonfinancial metrics, as well as narrative information. Trend data and targets are suggested as important to help stakeholders understand reported metrics. The report also advocates presentation of a balanced understanding of investors' returns and societal impacts. These recommendations are important to help provide a context and deeper understanding of what companies are reporting.

The report stops short of requiring assurance for reports prepared according to the framework. Given the amount of subjectivity inherent in the application of sustainability across organizations and the lack of a common measurement system, however, the additional objectivity provided through assurance would likely make the reports more credible to readers.

After considering the steps required to embed sustainability into corporate strategy and operations, and then to develop appropriate reports that reflect the company's sustainability efforts and progress, managers may find application of the framework to their own companies daunting. The steps necessary to do so can be extremely costly and time-consuming. For example, there is discussion of performing life cycle assessments (LCAs) in the process of embedding sustainability into the organization. LCAs are not particularly low cost, and there is a lot of subjectivity in performing them. Depending on the aspect of sustainability that is being embedded in the organization, there may not be resources (including time) to do the LCAs in a way that can help with the process.

Despite the potential enormity of the undertaking, however, the tone and approach promoted in the report are likely to make the task less intimidating. One helpful feature of both the report and the website is a series case studies of companies that have implemented different portions of the framework. These examples make the framework much more accessible. The variety of resources available through the website is a nice contribution as well.

Perhaps one area where the report could be improved is that, in the discussion of taking sustainability into account in day-to-day decision-making, there is too much emphasis on suppliers. Two of the three phases detailing sustainability impacts of products and services are focused on supplier sustainability. While one could argue that a supplier could be an internal supplier, the presentation in the report implies an external supplier, thus placing too low an emphasis of sustainability impacts of processes within the organization.

The report makes no claim to provide a complete solution to sustainability reporting. Instead, it provides a basis for further development of sustainability accounting. Together, the report and the website provide a nice variety of resources and a reasonable approach for companies to begin integrating elements of sustainability into their organizations. The reporting framework is less developed, but it provides a good basis for continuing discussion and development.

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CAPSULE COMMENTARY

By the Book Review Editor

PETER A. FIRMIN, *Pioneering Excellence: A History of Accounting Education at the University of Denver* (University of Denver, 2007, ISBN 0-9648871-2-6, pp. xii, 116)

This is a great deal more than the typical history of a business school or of an accounting department or school. Peter A. Firmin, a consummate accounting educator and a former dean of the University of Denver's Daniels College of Business, has produced a handsome and richly informative intellectual study of the evolution of accounting education at the College, which celebrates the 100th anniversary of its founding in 2008.

Firmin gives ample attention not only to the succession of accounting faculty over the years, but also to many alumni of local and national importance, and he has written numerous thoughtful profiles of their contributions to education and to the profession. Among those who are cited for their leadership are John Bart Geijbeek, Roy B. Kester, Clem W. Collins, Oscar S. Gellein, James Don Edwards, and Robert R. Sterling, as well as the two pillars of DU accounting education for the whole of their professional careers, Wayne Shroyer and Jerry Kesselman.

This is a sumptuous book, as enjoyable to read as it is edifying to the mind. It represents a labor of love by the author, who has devoted himself to DU for more than 30 years.

A limited number of copies of the book may be purchased for $25 by writing Professor A. Ronald Kucic, Director of the School of Accountancy, Daniels College of Business, University of Denver, Denver, CO 80208.

Editorial Data

The following table contains information about turnaround time for manuscripts (including revisions) on which editorial decisions were made in the 12-month period ended May 31, 2007. Turnaround time is the number of days between the date that the manuscript was received *and the date of the editor's letter to the author(s).*

	Number of Manuscripts	Percent	Cumulative Number	Cumulative Percent
0 ≤ Days ≤ 30	39	8.32	39	8.32
31 ≤ Days ≤ 60	153	32.62	192	40.94
61 ≤ Days ≤ 90	153	32.62	345	73.56
91 ≤ Days ≤ 120	86	18.34	431	91.90
121 ≤ Days	38	8.10	469	100.00
Total	469	100.00		

The mean review time was 70; the median review time was 66 days.

New Submissions by calendar year (January 1 to December 31)

1992	241
1993	234
1994	231
1995	195
1996	230
1997	195
1998	196
1999	239
2000	260
2001	260*
2002	324
2003	327
2004	307
2005	389
2006	413
2007	443

*2001—in addition to the 260 regular submissions, 68 MSs were submitted to the *TAR* Quality of Earnings Conference.

The acceptance rate (defined as number of MSs accepted divided by the number of new submissions) over the past 5 years is between 12–16% per year.

EDITORIAL POLICY AND STYLE INFORMATION

EDITORIAL POLICY

According to the policies set by the Publications Committee (which were endorsed by the Executive Committee and were published in the *Accounting Education News*, June 1987), *The Accounting Review* "should be viewed as the premier journal for publishing articles reporting the results of accounting research and explaining and illustrating related research methodology. The scope of acceptable articles should embrace any research methodology and any accounting-related subject, as long as the articles meet the standards established for publication in the journal ... No special sections should be necessary. The primary, but not exclusive, audience should be—as it is now—academicians, graduate students, and others interested in accounting research."

The primary criterion for publication in *The Accounting Review* is the significance of the contribution an article makes to the literature. Topical areas of interest to the journal include accounting information systems, auditing and assurance services, financial accounting, management accounting, taxation, and all other areas of accounting, broadly defined. The journal is also open to all rigorous research methods.

The efficiency and effectiveness of the editorial review process is critically dependent upon the actions of both authors submitting papers and the reviewers. Authors accept the responsibility of preparing research papers at a level suitable for evaluation by independent reviewers. Such preparation, therefore, should include subjecting the manuscript to critique by colleagues and others and revising it accordingly prior to submission. The review process is not to be used as a means of obtaining feedback at early stages of developing the research.

Reviewers and editors are responsible for providing constructive and prompt evaluations of submitted research papers based on the significance of their contribution and on the rigor of analysis and presentation.

MANUSCRIPT PREPARATION AND STYLE

The Accounting Review's manuscript preparation guidelines follow *The Chicago Manual of Style* (15th ed.; University of Chicago Press). Another helpful guide to usage and style is *The Elements of Style*, by William Strunk, Jr., and E. B. White (Macmillan). Spelling follows *Webster's Collegiate Dictionary.*

FORMAT

1. All manuscripts should be formatted in 12-point font on 8 1/2 x 11" paper and should be double-spaced, except for indented quotations.
2. Manuscripts should be as concise as the subject and research method permit, generally not to exceed 7,000 words.
3. Margins should be at least one inch from top, bottom, and sides.
4. To promote anonymous review, authors should not identify themselves directly or indirectly in their papers or in experimental test instruments included with the submission. Single authors should not use the editorial "we".
5. A cover page should show the title of the paper, all authors' names, titles and affiliations, email addresses, and any acknowledgments.

Pagination: All pages, including tables, appendices and references, should be serially numbered. Major sections should be numbered in Roman numerals. Subsections should not be numbered.

Numbers: Spell out numbers from one to ten, except when used in tables and lists, and when used with mathematical, statistical, scientific, or technical units and quantities, such as distances, weights and measures. For example: *three days; 3 kilometers; 30 years.* All other numbers are expressed numerically.

Percentages and Decimal Fractions: In nontechnical copy use the word percent in the text.

Hyphens: Use a hyphen to join unit modifiers or to clarify usage. For example: *a cross-sectional equation; re-form.* See *Webster's* for correct usage.

Keywords: The abstract must be followed by at least three keywords to assist in indexing the paper and identifying qualified reviewers.

Data availability: A line immediately following the Keyword identifiers should indicate whether the data are available (see "Data Availability" later in this statement).

ABSTRACT/INTRODUCTION

An Abstract of about 100 words (150 maximum) should be presented on a separate page immediately preceeding the text. The Abstract should concisely inform the reader of the manuscript's topic, its methods, and its findings. Keywords and the Data Availability statements should follow the Abstract. The text of the paper should start with a section labeled "I. Introduction," which provides more details about the paper's purpose, motivation, methodology, and findings. Both the Abstract and the Introduction should be relatively nontechnical, yet clear enough for an informed reader to understand the manuscript's contribution. The manuscript's title, but neither the author's name nor other identification designations, should appear on the Abstract page.

TABLES AND FIGURES

The author should note the following general requirements:

1. Each table and figure (graphic) should appear on a separate page and should be placed at the end of the text. Each should bear an Arabic number and a complete title indicating the exact contents of the table or figure. Tables and figures should define each variable. The titles and definitions should be sufficiently detailed to enable the reader to interpret the tables and figures without reference to the text.
2. A reference to each graphic should be made in the text.
3. The author should indicate where each graphic should be inserted in the text.
4. Graphics should be reasonably interpreted without reference to the text.
5. Source lines and notes should be included as necessary.

Equations: Equations should be numbered in parentheses flush with the right-hand margin.

DOCUMENTATION

Citations: Within-text citations are made using an author-year format. Cited works must correspond to the list of works listed in the "References" section. Authors should make an effort to include the relevant page numbers in the within-text citations.

1. In the text, works are cited as follows: author's last name and year, without comma, in parentheses. For example: one author, (Berry 2003); two authors, (Fehr and Schmidt 2003); three or more authors, (Dechow et al. 1998); more than one work cited, (Cole and Yakushiji 1984; Dechow et al. 1995; Levitt 1998); with two works by the same author(s), (Nelson 2003, 2005).
2. Unless confusion would result, do not use "p." or "pp." before page numbers. For example, (Dechow and Dichev 2002, 41–42).
3. For cited works that include more than one work by an author (or same co-authors) that are published in the same year, the suffix a, b, etc., is to follow the date in the within-text citations and in the "References" section. For example: (Baiman and Rajan 2002a, 2002b).
4. When the author's name is mentioned in the text, it need not be repeated in the citation. For example: "Cohen et al. (2005) provide ..."
5. Citations to institutional works should use acronyms or short titles where practicable. For example: (NCFFR, The Treadway Commission 1987).
6. If the paper refers to statutes, legal treatises, or court cases, citations acceptable in law reviews should be used.

Reference List: Every manuscript must include a "References" section that contains only those works cited within the text. Each entry should contain all information necessary for unambiguous identification of the published work. Use the following formats (which follow *The Chicago Manual of Style*):

1. Arrange citations in *alphabetical order* according to the surname of the first author or the name of the institution or body responsible for the published work.
2. Arrange citations in *chronological order* when two or more works are by the same first author (regardless of co-authors). Two or more works by the *same author(s)* published in the same year are distinguished by letters a, b, etc., after the year.
3. Use authors' initials instead of proper names.

4. For two or more authors, separate authors with a comma, including a comma before "and" (Dechow, P. M., R. Sloan, and A. Sweeney).
5. Date of publication follows the author's (authors') name(s).
6. Titles of journals or newspapers should not be abbreviated.

Sample entries are as follows:

Baiman, S., and M. Rajan. 2002a. The role of information and opportunism in the choice of buyer-supplier relationships. *Journal of Accounting Research* 40 (2): 247–278.

———, and ———. 2002b. Incentive issues in inter-firm relationships. *Accounting, Organizations and Society* 27 (3): 213–238.

Berry, R. 2003. Testimony before the Senate Committee on Homeland Security and Governmental Affairs Permanent Subcommittee on Investigations. November 18. Available at: http://hsgac.senate.gov/files/111803berry.pdf.

Cohen, D., A. Dey, and T. Lys. 2005. The Sarbanes Oxley Act of 2002: Implications for compensation structure and risk-taking incentives of CEOs. Working paper, New York University, University of Chicago, and Northwestern University.

Cole, R., and T. Yakushiji, eds. 1984. *The American and Japanese Auto Industries in Transition.* Ann Arbor, MI: University of Michigan.

Dechow, P. M., R. Sloan, and A. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (2): 193–225.

———, S. P. Kothari, and R. L. Watts. 1998. The relation between earnings and cash flows. *Journal of Accounting and Economics* 25: 133–168.

———, and I. Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors, *The Accounting Review* 77 (Supplement): 35–59.

Easton, P. 2003. Discussion of: The predictive value of expenses excluded from pro forma earnings. *Review of Accounting Studies* 8: 175–183.

Engel, E., R. Hayes, and X. Wang. 2007. The Sarbanes-Oxley Act and firms' going-private decisions. *Journal of Accounting and Economics* (forthcoming).

Financial Accounting Standards Board (FASB). 2006. *Accounting for Uncertainty in Income Taxes, and Interpretation of FASB Statement No. 109.* FASB Interpretation No. 48. Financial Accounting Series. Norwalk, CT: FASB.

Fehr, E., and K. Schmidt. 2003. A theory of fairness, competition, and cooperation. In *Advances in Behavioral Economics*, edited by C. Camerer, G. Loewenstein, and M. Rabin, 271–296. New York, NY: Princeton University Press.

Janis, I. L. 1982. *Groupthink: Psychological Studies of Policy Decisions and Fiascoes.* Boston, MA: Houghton Mifflin.

Levitt, A. 1998. The numbers game. Speech delivered at New York University, Center for Law and Business, September 28.

Maggi, G. 1999. The value of commitment with imperfect observability and private information. *RAND Journal of Economics* (Winter) 30: 555–574.

National Commission on Fraudulent Reporting (the Treadway Commission). 1987. *Report of the National Commission on Fraudulent Financial Reporting.* Washington, D.C.: NCFFR.

Nelson, M. W. 2003. Behavioral evidence on the effects of principles- and rules-based standards. *Accounting Horizons* 17 (1): 91–104.

———. 2005. A review of experimental and archival conflicts-of-interest research in auditing. In *Conflicts of Interest: Challenges and Solutions in Business, Law, Medicine, and Public Policy*, edited by D. A. Moore, D. M. Cain, G. Loewenstein, and M. H. Bazerman. Cambridge, U.K.: Cambridge University Press.

Rigdon, E. E., R. E. Schumacker, and W. Wothke. 1998. A comparative review of interaction and nonlinear modeling. In *Interaction and Nonlinear Effects in Structural Equation Modeling*, edited by R. E. Schumacker, and G. A. Marcoulides, 1–16. Mahwah, NJ: Erlbaum Associates.

Schultz, E., and T. Francis. 2002. Companies profit on workers' deaths through "dead peasants" insurance. *Wall Street Journal* (April 19): 1.

Securities and Exchange Commission (SEC). 2002. *Certification of Disclosure in Companies' Quarterly and Annual Reports.* Release Nos. 33-8124, 34-46427. Washington, D.C.: SEC.

U.S. House of Representatives. 2002. The Sarbanes-Oxley Act of 2002. Public Law 107-204 [H. R. 3763]. Washington, D.C.: Government Printing Office.

Footnotes: Footnotes are not used for documentation. Textual footnotes should be used only for extensions and useful excursions of information that if included in the body of the text might disrupt its continuity. Footnotes should be inserted using the "footnote" or "endnote" feature of the word processing software which will automatically number the footnotes throughout the manuscript with superscript Arabic numerals.

SUBMISSION OF MANUSCRIPTS

Authors should note the following guidelines for submitting manuscripts:

1. Manuscripts currently under consideration by another journal or publisher should not be submitted. The author must state upon submission that the work is not submitted or published elsewhere.
2. For manuscripts reporting on field surveys or experiments: If the additional documentation (e.g., questionnaire, case, interview schedule) is sent as a separate file, then all information that might identify the author(s) must be deleted from the instrument.
3. Manuscripts should be submitted via email as Microsoft Word or PDF file to the Senior Editor, Steven Kachelmeier, at email address tar@mccombs.utexas.edu. Please submit separate files for (1) the manuscript's title page with identifying information (not forwarded to reviewers), (2) the manuscript with title page and all other identifying information removed, and (3) any necessary supplemental files, such as experimental instructions and/or response memoranda on invited revisions. The body or subject line of the email should also indicate the submission fee receipt code from AAA (see step 4 below).
4. A submission fee is required unless explicitly waived by the editor for invited revisions of previous submissions. The submission fee should be paid online (VISA or MasterCard only) at: https://aaahq.org/AAAforms/journals/tarsubmit.cfm. If unable to pay online, a check in U.S. funds, made payable to the American Accounting Association, may be sent to Ms. Mary Capps, Editorial Assistant, *The Accounting Review*, The University of Texas at Austin, McCombs School of Business, Department of Accounting CBA 4M.202, 1 University Station B6400, Austin, TX 78712-0211. The submission fee in U.S. funds is $200.00 for members and $400.00 for nonmembers of the AAA. The submission fee is nonrefundable.
5. Revisions must be submitted within 12 months from the decision letter inviting a revision.

COMMENTS

The Accounting Review welcomes submissions of comments on previous *TAR* articles. Comments on articles previously published in *The Accounting Review* will generally be reviewed by two reviewers, usually including an author of the original article (to assist the editor in evaluating whether the submitted comment represents the prior article accurately) and an additional reviewer who is independent of the original article. If a comment is accepted for publication, the original author will generally be invited to reply. All other editorial requirements, as enumerated above, apply to proposed comments.

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The following policy was adopted by the Executive Committee in its 1989 meeting. "An objective of (*The Accounting Review, Accounting Horizons, Issues in Accounting Education*) is to provide the widest possible dissemination of knowledge based on systematic scholarly inquiries into accounting as a field of professional research, and educational activity. As part of this process, authors are encouraged to make their data available for use by others in extending or replicating results reported in their articles. Authors of articles which report data dependent results should footnote the status of data availability and, when pertinent, this should be accompanied by information on how the data may be obtained."

SEPTEMBER 2008 PLACEMENT ADS

The deadline for information to be included in the "Placement Information" section is two months prior to the date of publication. The ***Review*** *is published in January, March, May, July, and October. Placement advertising and replies should be sent to the American Accounting Association, 5717 Bessie Drive, Sarasota, FL 34233-2399, ATTENTION: ADVERTISING DEPT. All replies to box numbers should be on separate sheets to facilitate forwarding.*

501 SEOUL NATIONAL UNIVERSITY College of Business Administration, invites applications for a tenure/non-tenure-track accounting faculty position at all levels starting Spring 2009. All areas of accounting will be considered. An established record of research, a commitment to continued scholarship, and excellence in teaching are required. The successful candidate is expected to teach two to three courses each semester at graduate and/or undergraduate levels. The remuneration will be competitive, being commensurate to qualifications. The contract of non-tenure-track position is for one year and renewable. A faculty apartment with nominal rents will be available on the campus. Please send an application, current curriculum vitae, and three references to: Professor Tae-Sik Ahn, College of Business Administration, Seoul National University, Kwanak-ku, Seoul, Korea 151-742; Phone: (82-2) 880-8260; Email: ahnts@snu.ac.kr.

502 UNIVERSITY OF SOUTHERN MAINE Department of Accounting and Finance invites applicants for a tenure-track position to teach undergraduate and graduate courses in accounting beginning Fall 2009. Applicants at all ranks will be considered. Applicants must possess a Ph.D./D.B.A. in accounting from an AACSB-accredited institution. The position is open to candidates in all areas of accounting. Teaching responsibilities include introductory financial and/or managerial courses and upper level/graduate courses in an accounting specialty area. A demonstrated commitment to intellectual contributions and evidence of successful scholarship is expected. A commitment to providing service to the university and profession is expected. Professional experience and certification is preferred. The School of Business at USM is accredited by AACSB International. Review of applications begins immediately and continues until the position is filled. A representative of the search committee will be in attendance and conducting preliminary interviews at the Placement Center at the August AAA meeting in Anaheim. Send letter of application and curriculum vitae to: Dr. George Violette, University of Southern Maine, School of Business, PO Box 9300, Portland, ME 04104-9300; Email: violette@usm.maine.edu; Fax: (207) 780-4662. All finalists will be required to provide three written letters of reference. USM has an institution-wide commitment to inclusion, diversity, multiculturalism, and community.

503 UNIVERSITY OF RICHMOND Robins School of Business invites applications for two tenure-track positions at the Assistant or Associate Professor level to begin in Fall 2009. We are primarily interested in candidates with teaching and research interests in Managerial Accounting, Accounting Information Systems, and Auditing. Qualifications include the ability to provide excellent undergraduate and graduate teaching and the potential for outstanding research. Salary, benefits, and support are competitive with other AACSB-accredited schools. The University of Richmonds undergraduate and part-time M.B.A. programs are nationally ranked by BusinessWeek. Representatives will be available at the AAA Annual Meeting in Anaheim, California in August. Applicants must send a cover letter, curriculum vita, and names of three references to: Search Committee c/o Marshall Geiger, Robins School of Business, University of Richmond, 1 Gateway Road, Richmond, VA 23173; Email materials to: mgeiger@richmond.edu. Application materials will be shared with the department faculty. The University of Richmond is committed to developing a diverse workforce and student body and to supporting an inclusive campus community. The University of Richmond is an Equal Opportunity Employer.

504 NORTHEASTERN UNIVERSITY has an opening for one tenure-track position effective September 2009 at the Assistant or Associate Professor rank. We seek individuals holding a Ph.D., some experience in a tenure-track position and a commitment to excellence in teaching and research. Teaching experience in financial accounting, research productivity, and some business background are preferred. The accounting group provides a supportive environment where collaboration in teaching and research is encouraged. The position offers competitive compensation and teaching responsibilities that enable a notable level of high-impact research. Rank and salary are dependent on qualifications. Summer funding, graduate assistants, and travel support are available. Accounting courses are offered at both the undergraduate and at the graduate levels (M.B.A., M.S./M.B.A., M.S.A., and M.S. Tax). Send a cover letter, a cv, and two samples of scholarly work to: Dr. Marjorie Platt, 404 Hayden Hall, Northeastern University, Boston, MA 02115; Email: m.platt@neu.edu. Northeastern University is an Affirmative Action/Equal Opportunity/Title IX Employer and welcomes applications from minorities, women, and persons with disabilities.

505 CASE WESTERN RESERVE UNIVERSITY Weatherhead School of Management invites applications for Associate or Full Professor of Accountancy for Fall 2009. Requirements include a doctorate in accountancy and a very strong record of research. Evidence of quality teaching is also necessary. Although candidates with a specialization in any accountancy area are invited to apply, we prefer those interested in the auditing, financial, and managerial areas. Professional certification (e.g., CPA, CMA) is required. The Department offers a B.S. in Accountancy, a Master of Accountancy, and a Ph.D. Department faculty are also heavily involved in the M.B.A. program. All programs are AACSB-accredited. Additional information can be found at: http://weatherhead.case.edu/acct. Send curriculum vita and other materials to Elaine Iannicelli at: eri@case.edu by October 1, 2008. Women and minority applicants are especially welcome. In employment, as in education, Case Western Reserve University is committed to Equal Opportunity and Diversity.

506 UNIVERSITY OF CALGARY Haskayne School of Business is seeking a distinguished scholar with an international reputation as an active influential researcher in the field of Accounting to fill the Richard F. Haskayne, OC, FCA, Chair. Seeking Ph.D.-qualified candidates with an outstanding research record in pinnacle academic journals, a record of collaboration with industry, and proven ability to work effectively with colleagues and graduate students to build a strong research culture. Credentials should be appropriate for an appointment at the rank of Full Professor or Senior Associate. High motivation for teaching is also required. Please visit http://www.ucalgary.ca/hr/careers and reference posting number 6538 to view the complete posting as well as application submission instructions. All applicants received before September 15, 2008 will receive full consideration. The review of applications will continue until the position is filled. All qualified candidates are encouraged to apply; however, Canadians and Permanent Residents will be given priority.

507 BUTLER UNIVERSITY invites applications for two tenure-track Accounting positions at the Assistant or possibly Associate rank, starting August 2009. We seek two colleagues who hear a slightly different drummer and will take maximum advantage of opportunities by developing their skills in experiential education, engaging with businesses to improve students learning, and facilitating research. Candidates should have teaching interests in either Managerial or Financial Accounting, and a willingness to teach either Not-for-Profit Accounting or Accounting Information Systems. Applicants should possess a Ph.D., be capable of high-quality teaching at the undergraduate and graduate levels, and have an active research program. Salary is competitive and is comparable to peer institutions. Accredited by AACSB, the College enrolls 700 full-time undergraduates, over 275 part-time M.B.A. students, and has a Master of Professional Accounting program. The college received a $22 million grant that provides opportunities for faculty development, research support, and interaction with the businesses. The teaching load is three courses per semester but a lower teaching load is negotiable. Please send a vita, along with a letter of intent to: Professor Harry Hicks, Butler University, College of Business, 4600 Sunset Avenue, Indianapolis, IN 46208; Email: hhicks@butler.edu. Butler University is an Equal Opportunity Employer.

508 UNIVERSITY OF BALTIMORE Merrick School of Business, an AACSB-accredited university at both undergraduate and graduate levels, invites applications for a full-time Assistant Professor in Accounting to begin Fall 2009. All research and teaching interests will be considered but a background in financial accounting is preferred. Candidates are required to hold a doctoral degree (Ph.D. or D.B.A.) in accounting from an AACSB International-accredited university. ABDs will be considered if completion is expected within the first year of appointment. We are looking for balanced individuals who can provide high-quality teaching and publish in peer-reviewed journals. Department Faculty will be available at the 2008 AAA Annual Meeting to meet with interested applicants. Application materials must include a detailed cover letter, curriculum vitae, recent teaching evaluations, and names and addresses of three professional references that may be contacted. Applications may be directed to: Dr. Lourdes White (lwhite@ubalt.edu), Professor of Accounting.

509 THE PENNSYLVANIA STATE UNIVERSITY Smeal College of Business, Department of Accounting is seeking candidates for director of its new Master In Accounting (M.Acc.) Program, expected to be launched in Fall 2009. The position is that of a Clinical Professor representing a non-tenure-track appointment. Rank is open and will depend upon experience and qualifications. This position is an ideal appointment for individuals with a proven record of academic administration, excellent teaching, and involvement in student advising and mentoring. A Ph.D. in Accounting, track record of excellent teaching, experience in industry, practice, or academic administration are preferred. The initial employment contract may start as early as July 1, 2008 for an initial contract period of three years (subject to renewal at the end of 2nd year). Salary competitive and commensurate with qualifications. Application Deadline: December 31, 2008, or until position is filled. Qualified candidates should send letter of interest, teaching interest and philosophy, resume, evidence of teaching capabilities, and three references to: Tammy Snook, Penn State, Department of Accounting, 354 Business Building, University Park, PA 16802-1914. The Pennsylvania State University is committed to affirmative action, equal opportunity, and the diversity of its workforce. Candidates from underrepresented groups are encouraged to apply.

510 UNIVERSITY OF DAYTON invites applications for a tenure-track position at Assistant/Associate rank beginning August 2009. Taxation and auditing of particular interest, but other areas considered. Candidates must meet AACSB "AQ" requirements; typically including appropriate Ph.D. from AACSB-accredited institution (ABD very close considered). Candidates should have proven record, or clear potential, for very good teaching and publishable research. We prefer a scholar with demonstrated experience teaching students from diverse racial and ethnic backgrounds. AACSB program graduates 90 undergraduates per year, with 30 also completing an M.B.A. program that includes an accounting concentration. 6,700 full-time, residential undergraduates (12,000 total students) are on an attractive Dayton campus in SW Ohio near Cincinnati, Columbus, and Indianapolis. Applicants should send a letter of interest and resume to Dr. Ron Burrows; Department of Accounting; University of Dayton; 300 College Park; Dayton, OH 45469-2242. Email: Ron.Burrows@notes.udayton.edu. The University of Dayton, a comprehensive, Catholic University founded by the Society of Mary in 1850, is an Equal Opportunity/Affirmative Action employer. Women, minorities, individual with disabilities, and veterans are strongly encouraged to apply. The University is firmly committed to a principle of diversity.

511 UNIVERSITY OF NORTH CAROLINA AT GREENSBORO Bryan School of Business Department of Accounting and Finance invites applicants for a tenure-track position starting Fall 2009. A doctorate (or short-term ABD status) in Accounting from an accredited university is required. Preference will be given to individuals with research and teaching interests in financial accounting. The academic rank is open and the salary competitive. Greensboro is located in the Piedmont Triad region near the Research Triangle and other educational institutions. The Department consists of 14 full-time faculty and offers B.S. degrees and a M.S. degree in Accounting. The Bryan School is accredited by AACSB International in both business and accounting. The Department has subscriptions to CRSP, Compustat, and WRDS. To apply submit a letter of interest, curriculum vita, and references to Accounting Search Committee at ACCFIN@uncg.edu or by mail to: UNCG Bryan School of Business and Economics, PO Box 26165, Greensboro, NC 27402-6165. AA/EOE. UNCG is committed to recruitment and advancing women and minorities at all faculty/staff levels.

512 UNIVERSITY OF NORTH CAROLINA AT GREENSBORO Bryan School of Business Department of Accounting and Finance invites applicants for a tenure-track position starting Fall 2009. A doctorate (or short-term ABD status) in Accounting from an accredited university is required. The academic rank is open and the salary competitive. Greensboro is located in the Piedmont Triad region near the Research Triangle and other educational institutions. The Department consists of 14 full-time faculty and offers B.S. degrees and a M.S. degree in Accounting. The Bryan School is accredited by AACSB International in both business and accounting. The Department has subscriptions to CRSP, Compustat, and WRDS. To apply submit a letter of interest, curriculum vita, and references to Accounting Search Committee at ACCFIN@uncg.edu or by mail to: UNCG Bryan School of Business and Economics, PO Box 26165, Greensboro, NC 27402-6165. AA/EOE. UNCG is committed to recruitment and advancing women and minorities at all faculty/staff levels.

513 UNIVERSITY OF NORTH CAROLINA AT GREENSBORO Bryan School of Business Department of Accounting and Finance invites applicants for a one-year visiting position starting Fall 2008. A doctorate (or short-term ABD status) in Accounting from an accredited university is required. The academic rank is open and the salary competitive. Greensboro is located in the Piedmont Triad region near the Research Triangle and other educational institutions. The Department consists of 14 full-time faculty and offers B.S. degrees and a M.S. degree in Accounting. The Bryan School is accredited by AACSB International in both business and accounting. The Department has subscriptions to CRSP, Compustat, and WRDS. To apply submit a letter of interest, curriculum vita, and references to Accounting Visiting Search Committee at vacf1343@uncg.edu or by mail to: UNCG Bryan School of Business and Economics, PO Box 26165, Greensboro, NC 27402-6165. AA/EOE. UNCG is committed to recruitment and advancing women and minorities at all faculty/staff levels.

514 DREXEL UNIVERSITY LeBow College of Business, Department of Accounting invites applications for two authorized tenure-track positions starting September 1, 2009. Entry-level candidates should have received their doctorates before the beginning of the contract period. Candidates for senior positions should demonstrate a strong record of research and evidence of teaching excellence. One of the positions is in Accounting Information Systems. The other position is open to all specializations in the accountancy area. The LeBow College of Business offers undergraduate accounting degree, M.S. Accounting, M.B.A. with an accounting concentration, and a Ph.D. with an accounting emphasis. The Department has a rich tradition of interfacing with the Philadelphia business community through our well-established undergraduate co-op program and an active Accounting Advisory Board. The search committee will conduct preliminary interviews at the 2008 AAA Annual Meeting in Anaheim. Positions will remain open until filled. Send a letter of application, vita, and other supporting materials electronically to Helen Choy at: hc349@drexel.edu. Drexel University is an Equal Opportunity/Affirmative Action Employer and encourages applications from women, members of minority groups, disabled individuals, and veterans.

515 UNIVERSITY OF CALIFORNIA, BERKELEY is currently seeking a Compliance Officer in the Extramural Funds Accounting (EFA) Office. Under the general direction of the EFA Director, the Compliance Officer is responsible for developing and leading the compliance program for all regulatory requirements related to contracts and grants accounting. This position will develop, implement, and monitor an effective post-award research compliance program to coordinate campus-wide initiatives to prevent, detect, and respond appropriately to compliance risks, and develop and deliver training to address the critical needs identified in the compliance program and internal audits. The ideal candidate will have a Bachelors degree in Business Administration or equivalent experience with emphasis in Accounting. Extensive experience in compliance management and a broad understanding of regulations related to sponsored research are required. For a more complete job description and to apply online, please visit: http://jobs.berkeley.edu, and indicate the job code 8535. EOE.

516 BENTLEY COLLEGE Department of Accountancy invites applications to fill three tenure-track positions in the Fall 2009: one in auditing, one in financial reporting, and a third that is open as to specialty. All ranks will be considered. A qualified candidate will have a doctoral degree in accounting (or expect completion of that degree by September 1, 2009), and a strong commitment to excellence in teaching and scholarly research. Bentley College and its accounting programs are AACSB-accredited. The Department offers an undergraduate degree in Accountancy, a joint undergraduate degree with the Finance Department, and M.S. degrees in Accountancy and Information Systems Audit and Control, an M.B.A. concentration in Accounting, and a Ph.D. program. The College also offers a Masters in Taxation, through a separate tax department. Bentley College provides a wide range of resources to both students and faculty through an extensive academic computing environment to support high-quality teaching, learning, and research. Interested candidates should submit to the chair of the search committee, Jean C. Bedard, (email: acrecruiting@bentley.edu) a current vita with a letter expressing interest in a faculty position.

517 MARQUETTE UNIVERSITY invites applications for one tenure-track position in Financial Accounting beginning Fall 2009. Applicants should hold a doctoral degree or be in the final stages of dissertation. The position will be filled at the rank of Assistant Professor. The primary teaching responsibility will be in Financial Accounting at the undergraduate and graduate levels. The normal teaching load is 12 semester hours (6 hours each semester) during the first year and 15 semester hours thereafter. Salary and research support are competitive. The department has 11 full-time faculty. Marquette offers AACSB-accredited undergraduate and graduate degrees in Accounting and Business. All applicants must apply online at: http://careers.marquette.edu/applicants/Central?quickFind=51648. Inquiries may be made to: Michael D. Akers, Professor and Chair, Department of Accounting, PO Box 1881, College of Business Administration, Marquette University, Milwaukee, WI 53201-1881; Email: Michael.Akers@Marquette.edu. Marquette University is an Affirmative Action/Equal Opportunity Employer.

518 MARQUETTE UNIVERSITY invites applications for one tenure-track position in Financial Accounting beginning Fall 2009. Applicants should hold a doctoral degree and demonstrated both a solid teaching and research record. The position will be filled at the rank of Associate Professor. The primary teaching responsibility will be in Financial Accounting at the undergraduate and graduate levels. The normal teaching load is 12 semester hours (6 hours each semester) during the first year and 15 semester hours thereafter. Salary and research support are competitive. The department has 11 Full-time faculty. Marquette offers AACSB-accredited undergraduate and graduate degrees in Accounting and Business. All applicants must apply online at: http://careers.marquette.edu/applicants/Central?quickFind=51650. Inquiries may be made to: Michael D. Akers, Professor and Chair, Department of Accounting, PO Box 1881, College of Business Administration, Marquette University, Milwaukee, WI 53201-1881; Email: Michael.Akers@Marquette.edu. Marquette University is an Affirmative Action/Equal Opportunity Employer.

519 INDIANA UNIVERSITY KOKOMO Tenure-track Accounting position. The position requires teaching 3 courses (9 credits) per semester on undergraduate and M.B.A. levels including: Advanced Financial Accounting; Intermediate Accounting II; Introductory Computer-Based Accounting Systems; and Introductory Accounting courses (emphasis is on Financial). Position requires teaching, research, and service. Starting date: August 2009. For full description, go to: http://www.iuk.edu/~kohr/docs/asstprofofaccounting.pdf Must have a doctorate degree in accounting. ABDs nearing completion of dissertation will be considered. CPA certification required. Candidates with professional accounting work experience given preference. Send cover letter, curriculum vitae, evidence of teaching effectiveness, and research productivity, summaries of student evaluations of instruction, and contact information for three references to: Accounting Search Committee, School of Business, Indiana University Kokomo, 2300 South Washington St., Kokomo, IN 46904-9003. A representative will attend the 2008 AAA Annual Meeting in Anaheim, August 3-6, 2008. Review begins October 6, 2008 and continues until filled. Indiana University Kokomo is an AA/EO employer.

520 UNIVERSITY OF NEW ORLEANS invites applications for an anticipated Assistant Professor position for Spring 2009 or Fall 2009. Preference will be given to those with teaching interests in some combination of taxation, auditing, financial, managerial, and governmental accounting. Candidates must have the Ph.D. with an accounting major (by May 2009 for Spring hires and December 2009 for Fall hires). Salary is negotiable and competitive. The Department offers the undergraduate accounting degree (about 500 majors) and two Masters degrees (including a Tax Option). The Department has separate AACSB accounting accreditation at both the graduate and undergraduate levels. Candidates should send a resume to: Professor Philip J. Harmelink, Chairman, Department of Accounting, College of Business Administration, University of New Orleans, New Orleans, LA 70148; Email: pharmeli@uno.edu. The University of New Orleans is a member of the Louisiana State University System and an Affirmative Action/Equal Opportunity Employer.

522 FAIRFIELD UNIVERSITY invites applications for a tenure-track position as Assistant/Associate Professor of Accounting to begin Fall 2009 in the Charles F. Dolan School of Business (AACSB International accredited). Candidates must have or be near completion of a terminal degree. Professional certification in accounting is required. All teaching and research areas will be considered. Preference will be given to those with the ability to teach in multiple areas. Successful candidates will be expected to demonstrate a commitment to teaching excellence and quality research. Fairfield University, an independent Jesuit comprehensive university, is located one hour from New York City and three hours from Boston. The University's scenic 200-acre campus is situated near Long Island Sound and serves approximately 3,100 full-time and 1,100 part-time undergraduate students and 750 graduate students. Early application is encouraged, as review of prospective candidates will begin immediately and continue until the position is filled. Please send a letter of application, vita, transcripts, and names and contact information for three references by September 2, 2008 to: Dr. Dawn Massey, Chair, Accounting Department, Charles F. Dolan School of Business, Fairfield University, Fairfield, CT 06824; Email: dmassey@mail.fairfield.edu. Representatives from Fairfield University are planning to attend the AAA Annual Meeting in early August. Fairfield University is an Affirmative Action/Equal Opportunity Employer. Women, minorities, and persons with disabilities are strongly encouraged to apply. Visit our website at: http://www.fairfield.edu

523 KENT STATE UNIVERSITY Department of Accounting, invites applications for two tenure-track positions at the Assistant or Associate Professor level beginning Fall 2009. We are primarily interested in candidates with teaching and research interests in Managerial Accounting, Accounting Information Systems, and Financial Accounting, but will consider all qualified candidates. Candidates must have, or anticipate having, a Ph.D. when employment begins. Professional certification such as a CPA or CMA is highly desirable. Research will be expected in high-quality, academic refereed journals; service on doctoral students dissertations will be part of the faculty members responsibilities. Review of applications will begin immediately and continue until the positions are filled. Applicants must send a cover letter and curriculum vitae to: Linda Zucca, Interim Chair, Department of Accounting, Kent State University, PO Box 5190, Kent, OH 44242; Email: lzucca@kent.edu. KSU representatives will be available at the AAA Annual Meeting in Anaheim California (August 3-6, 2008). AA/EOE.

524 SHIPPENSBURG UNIVERSITY invites applications for tenure-track Accounting faculty position(s) effective January or August 2009. Rank commensurate with qualifications including prior teaching experience, published accounting research, and professional certifications in accounting. Earned Ph.D. or D.B.A. in Accounting from AACSB institution preferred. Committee will consider an Accounting ABD from an AACSB-accredited program, and may consider applicants with an earned doctorate in related discipline if applicant has a CPA or CMA certification with demonstrated research interest in Accounting. Send written letter of application, current curriculum vitae, undergraduate and graduate transcripts (unofficial at application, official prior to interview), and contact information for three references to: Dr. Scott N. Cairns, College of Business, Shippensburg University, 1871 Old Main Drive, Shippensburg, PA 17247-2299. Applications are reviewed upon receipt as part of an ongoing search and will continue to be reviewed until the position(s) is filled. See http://www.ship.edu/HR/index.html for additional requirements and qualifications. Shippensburg University is an Equal Opportunity Employer. Individuals from traditionally underrepresented populations are encouraged to apply.

525 OREGON STATE UNIVERSITY invites applicants for a tenure-track position at the rank of Assistant to begin September 15, 2009. Responsibilities include research, teaching, and professional activities in the field of accounting. The primary teaching area will be intermediate financial accounting at the undergraduate level. Candidates should hold the appropriate doctorate. Professional certification is desirable. Salary is competitive, fringe benefits are excellent. Oregon State University is located in Corvallis, rated the second best small city in America. Qualified candidates must submit an application electronically at: http://oregonstate.edu/jobs/Posting No. 0002730, including a letter of interest, current vita, recent teaching evaluations, evidence of scholarly work, and a list of three references. Review begins November 1, 2008 and continues until the position is filled. Representatives will attend the 2008 AAA Annual Meeting August 5-7. Further information can be obtained by contacting Professor Roger Graham (roger.graham@bus.oregonstate.edu). OSU is an Affirmative Action/Equal Opportunity Employer.

526 DUQUESNE UNIVERSITY invites applications for a tenure-track position at the Assistant or Associate Professor level beginning Fall 2009. Applicants at the Assistant rank should have completed/ nearly completed their Ph.D. The ideal candidate is committed to teaching excellence and possesses an active research program. All teaching areas will be considered. Duquesne is a private, AACSB-accredited university ranked among the top ten Catholic Universities in the United States by U.S. News & World Report. Duquesnes campus spans a 50-acre hilltop and is a five-minute walk from downtown Pittsburgh. Submit a letter of application and curriculum vitae to Stephen Rau at: rau@duq.edu. Applications will be accepted until October 1, 2008 however we strongly encourage submission of materials by July 31, 2008. The search committee will conduct preliminary interviews at the 2008 AAA Annual Meeting in Anaheim. Position is pending administrative approval. Duquesne University is an Equal Opportunity/Affirmative Action Employer.

527 BOCCONI UNIVERSITY Department of Accounting, in Milan, Italy, invites applications for Faculty Positions at the Assistant Professor level, in the areas of Financial Accounting and Managerial Accounting. Candidates should hold a Ph.D. (or be close to completion), a strong teaching ability, and a relevant and proven ability to conduct scholarly research that may result in publications in high-quality international journals. The remuneration package is competitive at the European level and relevant support is given to research. More information about Università Bocconi is available at: http://www.unibocconi.it Application procedure: Candidates should send via email with attachments (Word or PDF preferred) a cover letter, a complete curriculum vitae, sample copies of their research (published or working papers), and two letters of recommendation or the names of two referees to: recruiting@unibocconi.it Applications should be received November 28, 2008.

528 NANYANG TECHNOLOGICAL UNIVERSITY Singapore's science and technology university, invites outstanding young researchers and exceptional scholars in their fields of science, engineering, social sciences, arts, and humanities or business to apply for appointments as Nanyang Assistant Professors. Up to 10 appointments will be made. Successful candidates will receive start-up research grants of up to S$1 million and an attractive remuneration package. They are expected to be within 10 years of gaining their Ph.D. and ready for independent leadership of their own research groups. Outstanding applicants in science and engineering are also encouraged to apply for the prestigious Singapore National Research Foundation Fellowships in Science and Technology (see http://www.nrf.gov.sg) indicating that the Fellowship will be held at the Nanyang Technological University. Please visit our website for more details. Closing Date: September 30, 2008.

529 LOUISIANA TECH UNIVERSITY School of Accountancy seeks applications for Assistant or Associate Professor for Fall 2009 appointment. Accounting doctorate is essential, and there is a strong preference for candidates with accounting certification and an interest in auditing. An established publication record of discipline-based scholarship in high quality journals is preferred. Position requires teaching at the upper division and graduate levels, publishing discipline-based research, and involvement with the accounting doctoral program. Applicant review will continue until position is filled. Salary is highly competitive. Located 65 miles east of Shreveport and 30 miles west of Monroe, enrollment is around 12,000 students. Please send applications or letters of inquiry to: Thomas J. Phillips, Jr., Director, School of Accountancy, PO Box 10318, Louisiana Tech University, Ruston, LA 71272; Phone: (318) 257-2822; Fax: (318) 257-4253; Email: phillips@latech.edu. Visit our website at: http://www.business.latech.edu. EEO/AA/ADA. Women and minorities encouraged to apply. Member of the University of Louisiana System.

530 MIAMI UNIVERSITY Department of Accountancy invites applicants for positions at the Assistant or Associate Professor level beginning August 2009. Applicants in any area of accounting will be considered. Applicants must have a doctorate in accounting or with expectation of completion of degree by December 31, 2009. Faculty members are expected to provide both high-quality teaching and research service to the profession and university. For appointment to Associate Professor, must demonstrate excellence in teaching and research. Information about the department is available on the web at: http://www.sba.muohio.edu. Please submit your resume and letters from three references to: Dr. Marc A. Rubin, Department of Accountancy, Farmer School of Business, Miami University, Oxford, Ohio 45056; Email: rubinma@muohio.edu. Screening of applications begins August 1, 2008 and will continue until the position is filled. Miami University is an EOE/AA employer with smoke-free campuses. Campus crime and safety Report at: http://www.muohio.edu/righttoknow. Hard copy upon request.

531 LEHIGH UNIVERSITY seeks well-trained scholars/teachers with strong research skills for two open positions to join its Accounting Department faculty in Fall 2009. Priority is to attract researchers, interested in joint research, and experienced in working with a variety of research methodologies. All areas will be considered. A dynamic accounting department, ranked the #1 undergraduate accounting program in 2008 by BusinessWeek, a successful M.S. in Accounting and Information Analysis program, the 25th best undergraduate business school according to BusinessWeek, and 5th in BusinessWeeks top part-time M.B.A. programs are reasons to consider Lehigh. If interested send vita, names of three references, and examples of scholarly work to: Dr. Parveen P. Gupta, Chair, Department of Accounting, Lehigh University, 621 Taylor Street, Bethlehem, PA 18015-3117; Email: inaccdep@lehigh.edu; Phone: (610) 758-3443. Lehigh University is an Equal Opportunity/ Affirmative Action Employer. Qualified women and minority candidates are especially encouraged to apply.

532 UNIVERSITY OF COLORADO AT COLORADO SPRINGS (UCCS) College of Business has a position for a tenure-track faculty member in the accounting area starting in Fall 2009. The successful candidate should be devoted to excellence in teaching and research in accounting. Preference will be given to applicants possessing a completed doctorate in accounting from an accredited business school. All ranks and teaching interests will be considered. A desire to teach taxation is a plus. More information about the College of Business and UCCS is available at: http://www.business.uccs.edu. Colorado Springs and the surrounding area is a thriving region of 600,000 located in the beautiful Pikes Peak region of Colorado. Our city offers many lifestyle amenities and advantages. Additional information about the Colorado Springs area is available at: http://www.coloradosprings.com. Interested applicants should email an application cover letter and current vita to Lisa Urenda at: search@uccs.edu. The University of Colorado at Colorado Springs is an Affirmative Action/Equal Opportunity Employer.

533 CONCORDIA UNIVERSITY located in beautiful Montreal, Quebec, Canada invites applications for tenure-track positions in Accountancy at the rank of Assistant, Associate, or Full Professor, effective July 1, 2009. A doctoral degree (completed or near completion) in Accountancy is required. Salaries are competitive and commensurate with qualifications and experience. These positions are subject to budgetary approval and are available until filled. The Department of Accountancy is one of five departments at the John Molson School of Business (AACSB-accredited), has nearly 30 full-time faculty members, is one of the largest in the country, and has an established record of excellence in accounting education and academic research. Please send your application package as soon as possible (i.e., cover letter, resume, statement of research interests and teaching philosophy, teaching evaluations, official Ph.D. transcript, working papers, and three sealed reference letters) but no later than February 2, 2009 to: Dr. Dominic Peltier-Rivest, Chairman, Department of Accountancy, John Molson School of Business, Concordia University, 1455 de Maisonneuve Blvd. West, Montreal, Quebec, Canada H3G-1M8; Email: drivest@jmsb.concordia.ca; Website: http://www.johnmolson.concordia.ca. Concordia has a policy of employment equity, including affirmative action for women faculty. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.

534 UNIVERSITY OF ST. THOMAS in Minneapolis/St. Paul, MN invites applicants for a tenure-track Accounting position starting Fall 2009. All areas are needed. The Opus College of Business supports undergraduate, full-time, and part-time M.B.A. programs, a variety of executive education offerings and a Master of Science in Accountancy. Doctorate preferred, ABD with a close completion date will be considered, D.B.A., graduate degree in taxation or combination of graduate degrees in law and accounting. Preference will be given to candidates who blend academic credentials and professional experience. Inspired by Catholic intellectual tradition, the University of St. Thomas educates students to be morally responsible leaders who think critically, act wisely, and work skillfully to advance the common good, and seeks to develop individuals who combine career competency with cultural awareness and intellectual curiosity. The successful candidate will possess a commitment to the ideals of this mission. Complete position information, visit: http://jobs.stthomas.edu. AA/EOE.

535 UNIVERSITY OF SAN DIEGO School of Business Administration invites applications for an accounting tenure-track appointment at the Assistant or Associate level beginning Fall 2009. Ph.D. or ABD required. Applicants with a primary emphasis in auditing and managerial accounting are desired. The highest level of need is in auditing. Initial summer research support is available. We are looking for balanced individuals who can provide high-quality teaching, applied research that is relevant to business, and professional service. Experienced Assistant- or Associate-level candidates desiring to relocate to San Diego are strongly encouraged to apply. Applicants should send a letter of application, current curriculum vitae, evidence of teaching effectiveness, and three references to: Dr. Loren Margheim, School of Business Administration, University of San Diego, 5998 Alcala Park, San Diego, CA 92110-2492. Electronic submissions to margheim@SanDiego.edu are encouraged. The university is a private institution holding both AACSB business and separate accountancy program accreditations. Position is subject to budgetary funding. We are an Equal Opportunity institution. Visit us at: http://www.sandiego.edu.

536 THE PENNSYLVANIA STATE UNIVERSITY ALTOONA invites applications for a tenure-track position in Accounting. An earned doctorate degree in Accounting from an AACSB-accredited institution is required, but ABD candidates near completion may be considered. CPA or related professional certification is a plus. Preference will be given to applicants with teaching and research interests in Auditing and in Accounting Information Systems. In addition to demonstrating dedication to teaching, the successful candidate in the tenure-track position is also expected to conduct research leading to publications in refereed journals, advise students, provide college service, and engage in continuing professional development. Applicants should send a letter of application establishing their qualifications, a current vita, a description of teaching philosophy and evidence of teaching effectiveness, a statement of research interests, transcripts (official transcripts required at the time of an interview), and three letters of reference. Applicants are strongly encouraged to submit their applications and accompanying materials electronically to: businessandengineering@psu.edu (in Word or PDF formats). See our website at: http://www.altoona.psu.edu. Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce.

538 CALIFORNIA STATE UNIVERSITY, EAST BAY invites applications for tenure-track, open rank position in accounting to begin September 2009. Applicants will be considered in all areas of specialty. A candidate must expect to have an earned doctorate in Accounting from an AACSB-accredited institution no later than the date of appointment. The candidate must demonstrate teaching excellence and commitment to successful research and publications. Professional or business experience is highly desirable. Review of applications will begin September 1, 2008 and will continue until the position is filled. Please send a letter of application, current vita, graduate transcripts, student evaluations, copies of major publications and three letters of recommendation to: Dr. Christopher Lubwama, Chair, Department of Accounting and Finance, California State University, East Bay, 25800 Carlos Bee Boulevard, Hayward, CA 94542; Phone: (510) 885-3397; Email: accounting.recruitment@csueastbay.edu. CSUEB is an Equal Opportunity Employer committed to diversity. Visit the website at: http://www.csueastbay.edu.

539 HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY (HKUST) seeks applicants for a continuing non-tenure-track teaching position. The position is for one or two years beginning Spring or Fall 2009, and is renewable subject to mutual agreement. Candidates must possess a doctorate and an excellent teaching record. Teaching breadth will be valued. Certain student support and service responsibilities will be expected. Salary is competitive and based on qualifications. Send a curriculum vitae, teaching evaluations if available, and the names and addresses (including email addresses) of three referees by email to: acchen@ust.hk or via mail to: Head, Department of Accounting, The Hong Kong University of Science & Technology, Clear Water Bay, Kowloon, Hong Kong. For more information about the department, go to: http://www.bm.ust.hk/~acct/.

540 GEORGE MASON UNIVERSITY invites applications and nominations for the position of Dean of the School of Management. The Dean of the School of Management provides overall academic and administrative leadership for the school and reports directly to the Provost. Qualifications: Applicants for the position must hold a Ph.D. in business, economics, or a related field, and must have a strong record as a teacher and scholar consistent with tenure at a research university. Applicants must have significant administrative experience in a college or university, and experience with collaborative governance. Review of applications and letters of nomination will begin August 31, 2008, and will continue through October 15, 2008, or until the position is filled. Please visit: http://jobs.gmu.edu (to see a complete list of responsibilities, qualifications, and application instructions for position number FA199z). AA/EOE.

541 UNIVERSITY OF PENNSYLVANIA invites applications for positions available July 2009 in Financial, Managerial, and Tax Accounting at all academic ranks. A Ph.D. or expected completion by June 30, 2010 required. Demonstrated ability or potential for high-quality research and teaching are important. Applications, including cover letter, curriculum vitae, and recent publications or working papers, must be submitted via our secure website: http://accounting.wharton.upenn.edu/faculty_recruiting. Junior-level candidates should also include contact information for up to three references who will be asked to submit letters of recommendation. The deadline for applications is January 15, 2009. Contact: Professor John Core, Accounting Department, The Wharton School, University of Pennsylvania,1300 Steinberg-Dietrich Hall, Philadelphia, PA 19104-6365. The University of Pennsylvania values diversity and seeks talented students, faculty, and staff from diverse backgrounds. The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer. Women, minority candidates, veterans and individuals with disabilities are strongly encouraged to apply.

542 CALIFORNIA STATE UNIVERSITY, LONG BEACH invites applicants for a tenure-track accounting faculty position, Assistant/Associate Professor for Fall, 2009. Applicants must hold a Ph.D. or a D.B.A. degree with a major in Accounting and have demonstrated potential for excellence in teaching, research, curriculum development, and service contributions. Professional certification is desirable. Compensation will be competitive and be commensurate with the candidates qualifications and experience. Applicant screening will begin November 3, 2008 and will continue until the position is filled. Please send a letter of application and curriculum vitae to: Dr. Steven A. Fisher, Chair, Department of Accountancy, California State University, Long Beach,1250 Bellflower Boulevard, Long Beach, CA 90840-8504; Email: sfisher@csulb.edu. CSULB is an urban university in the California State University System. It is located near the ocean in the City of Long Beach. CSULB is an Affirmative Action/Equal Opportunity Employer and has a strong commitment to the principle of diversity.

543 UTICA COLLEGE invites applicants for a tenure-track position in Financial Accounting at all ranks for Fall 2009. A research record commensurate with advanced rank is required for appointment at advanced rank. The primary area of specialization is Financial Accounting. Candidates should hold an earned doctorate from an AACSB-accredited institution. Professional certification is also desired. Candidates should demonstrate a strong interest in teaching and previous graduate teaching experience and distance learning experience is desired. Continued appointment requires evidence of scholarship and publication. Utica is the business and cultural center of the Mohawk Valley of upstate New York and is located in the foothills of the Adirondack Mountains. The area has excellent public schools, affordable housing, and ready access to all major northeastern cities by air, rail, and auto. Opportunities for both summer and winter recreation are abundant. Send curriculum vita and list of three current references by December 1st to: Dr. John H. Johnsen, Ph.D., Dean, School of Business and Justice Studies, Utica College, 1600 Burrstone Road, Utica, NY 13502. Applications from women and minorities are especially encouraged. The position will remain open until filled. Visit our website at http://www.utica.edu for more information on Utica College and the area.

544 WRIGHT STATE UNIVERSITY Raj Soin College of Business invites applications for a tenure-track Assistant/Associate Professor position in the Department of Accountancy beginning September 1, 2009. ABDs will be considered, Ph.D. or equivalent preferred. Must have outstanding record of scholarship for Associate rank. Applicants must meet Departments AACSB Academically Qualified criteria. Applicants should have strong commitment to scholarship, teaching excellence, and service. All areas of expertise will be considered. The Raj Soin College of Business and Department of Accountancy are both accredited by AACSB International. First review of applications will begin July 15, 2008 and will continue until position is filled. Send a letter of application, vita, and evidence of teaching effectiveness to: Dr. James Greenspan, Chair, Department of Accountancy, 240 Rike Hall, Wright State University, Dayton, OH 45435 0001; Email: James.Greenspan@wright.edu. A representative will be at the AAA Annual Meeting to conduct preliminary interviews. Wright State is an EO/AA Employer.

545 WRIGHT STATE UNIVERSITY Raj Soin College of Business invites applications for Visiting Assistant Professor/Lecturer in the Department of Accountancy beginning September 1, 2008. ABDs will be considered for visiting position, Ph.D. or equivalent preferred. Applicants must meet Departments AACSB Academically Qualified criteria. Applicants for Lecturer position must have graduate degree in business from AACSB school and be a CPA. Candidates should have substantial recent professional experience, and previous university teaching experience. All teaching areas considered. Both the College and Department are accredited by AACSB International. First review of applications will begin July 15, 2008 and will continue until position is filled. Send a letter of application, vita, and evidence of teaching effectiveness to: Dr. James Greenspan, Chair, Department of Accountancy, 240 Rike Hall, Wright State University, Dayton, OH 45435 0001; Email: James.Greenspan@wright.edu. A representative will be at the AAA Annual Meeting to conduct preliminary interviews. Wright State is an EO/AA Employer.

546 UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN Department of Accountancy is recruiting faculty for full-time appointments at all ranks. Candidates at advanced ranks must possess a doctoral degree, and candidates for Assistant Professor positions must possess or be near completion of a doctoral degree. Applicants for Senior positions should have a strong research record and the ability to participate in doctoral education and curriculum development at the undergraduate and graduate levels. In addition, non-tenure-track Lecturer and Visiting positions are available. Applicants should submit a resume that lists research publications and courses taught. Compensation is competitive and will be commensurate with the appointment level and applicants record. To ensure full consideration, applications must be received by November 1, 2008. Applications received thereafter may be considered if there are positions still available. Proposed starting date is May 16, 2009 or as soon as possible thereafter. Electronic submissions preferred. Send to: accyrecruiting@business.uiuc.edu. Contact: Recruiting Chair, Department of Accountancy, 360 Wohlers Hall, College of Business, University of Illinois, 1206 S. Sixth Street, Champaign, IL 61820. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

547 CENTRAL WASHINGTON UNIVERSITY Department of Accounting seeks applicants with specializations in Taxation, Management Accounting, and/or Financial Accounting for an anticipated tenure-track, Assistant/Associate Professor position beginning September 2009. The position is in the Greater Seattle area at our Lynnwood Center, which is located about 15 miles north of Seattle. Qualifications required: Ph.D. or D.B.A. in accounting, J.D./L.L.M., or in other ways academically qualified, although exceptional candidates with ABDs nearing completion of dissertation will be considered. Preferred: Record of publications to maintain academic qualifications. Demonstrated teaching effectiveness in accounting courses. Graduated from an AACSB-accredited institution. CPA, CMA, CFE, CIA, or CISA and accounting work experience. Salary is commensurate with qualifications and experience. See the Central Washington University website at: http://www.cwu.edu for the full position announcement. Please contact Dr. Jim Bailey, (509) 963-3560 or at jbailey@cwu.edu if you have questions or need further information. AA/EOE/Title IX Institution.

548 UNIVERSITY OF TOLEDO invites applications for a tenure-track position at the Assistant or Associate Professor level. The position begins in the Spring or Fall 2009. All areas of teaching will be considered. Faculty are expected to be actively involved in scholarly activities and must have a Ph.D. or D.B.A. in accounting from an accredited university. Preference will be given to applicants with professional certification (CPA, CMA, or CIA) and professional work experience. The position is open until filled. Send your letter of application and three letters of recommendation to: Diana Franz, Chair, Department of Accounting, Mail Stop 103, College of Business Administration, University of Toledo, Toledo, OH 43606; Email: Diana.Franz@utoledo.edu. The university is an AA/EOE.

549 UNIVERSITY OF NOTRE DAME Department of Accountancy invites applications for position openings at the Assistant and Associate Professor levels. All research areas will be considered. Applicants for Assistant Professor positions should expect to complete doctoral degree requirements before the start of the contract period. All candidates should have a strong commitment to scholarly research and excellence in teaching. Salary is very competitive and research support is excellent. Please send curriculum vita and an example of scholarly work to: Professor Fred Mittelstaedt, Chairman, Department of Accountancy, Room 102(d), Mendoza College of Business, University of Notre Dame, Notre Dame, IN 46556. The University of Notre Dame is committed to fostering a vibrant learning community animated by the Catholic intellectual tradition. It is located adjacent to the city of South Bend, Indiana, approximately 90 miles southeast of Chicago. For more information about the University of Notre Dame, the Mendoza College of Business, and the Department of Accountancy please visit the departments website at: http://www.nd.edu/~acctdept. The University of Notre Dame is an Equal Opportunity Employer with a strong institutional and academic commitment to diversity.

550 UNIVERSITY OF NOTRE DAME Department of Accountancy, invites applicants for a Professional Specialist teaching position beginning Spring or Fall 2009. The Professional Specialist designation is a non-tenure-track faculty teaching appointment that brings with it an employment contract renewable based on teaching performance and curricula requirements. Salary is very competitive. The successful candidate will teach three sections and coordinate an additional 12 to 15 sections of the departments first introductory accounting course each fall semester and the departments second introductory accounting course each spring semester. The anticipated section size will approximate 35 students. The University of Notre Dame has a select national undergraduate student body. Candidates should possess a Ph.D. and a strong commitment to teaching. Applications should include a curriculum vita (with two letters of recommendation) and evidence of excellent teaching performance and curriculum development. Please send all materials to: Professor Fred Mittelstaedt, Chairman, Department of Accountancy, Mendoza College of Business, Room 102(d), University of Notre Dame, Notre Dame, IN 46556. The University of Notre Dame is committed to fostering a vibrant learning community animated by the Catholic intellectual tradition. It is located adjacent to the city of South Bend, Indiana, approximately 90 miles southeast of Chicago. For more information about the University of Notre Dame, the Mendoza College of Business, and the Department of Accountancyspecifically the respective two undergraduate accounting coursesplease visit the departments website at: http://www.nd.edu/~acctdept. The University of Notre Dame is an Equal Opportunity Employer with a strong institutional and academic commitment to diversity.

551 MISSISSIPPI STATE UNIVERSITY College of Business and Industry, Adkerson School of Accountancy invites applicants to apply for a tenure-track position to begin Fall 2009. Rank is open, but candidates must have an accounting doctorate degree, demonstrated excellence in the field of accountancy. Consideration will be given to ABD candidates. In addition, the candidate is expected to participate in professional accounting activities and advise students. Professional certification and accounting practical experience are highly desirable. Salary is competitive. Send letter of interest, current curriculum vitae, and names (including contact information) of three references to: Chair, Search Committee, Adkerson School of Accountancy, Drawer EF, Mississippi State, MS 39762. Also complete the Personal Data Information form online at: http://www.jobs.msstate.edu. Position will remain open until filled. MSU is an AA/EEO Employer.

552 EMPORIA STATE UNIVERSITY Department of Accounting and Information Systems seeks an Assistant or Associate Professor of Accounting for Spring Semester/January 2009 or Fall/August 2009. A Ph.D. in Accounting or equivalent from an AACSB-accredited school is required. ABDs will be considered. University teaching experience in financial accounting, particularly intermediate accounting, accounting theory, and consolidations is desired with documentation evidencing a high level of classroom effectiveness required. Send a letter of application addressing the position requirements, a curriculum vitae, unofficial transcripts, the names, addresses, and telephone numbers of at least three references to: Chair, Department of Accounting and Information Systems, Emporia State University, 1200 Commercial Street, Campus Box 4057, Emporia, KS 66801-5087; Email; jwaegele@emporia.edu; Phone: (620) 341-5680; Fax: (620) 341-6346. The Department will be interviewing at the AAA Annual Meeting. AA/EOE institution, Emporia State University encourages minorities and women to apply. Visit us at: http://www.emporia.edu.

553 UNIVERSITY OF WESTERN ONTARIO Richard Ivey School of Business seeks candidates for a probationary (tenure-track) Assistant Professor appointment in the area of Accounting for July 2009. The successful candidate will demonstrate strong commitment to the practice of accounting/management in both research and teaching. Ability to teach introductory financial/management accounting courses and advanced financial reporting, or financial statement analysis is required. A Limited Term, Visiting, tenured Associate Professor or Professor appointment will also be considered. Applicants should have fluent written and oral communication skills in English. Submission deadline: October 31, 2007. Apply at www.ivey.uwo.ca/faculty/Career_Opps.htm. All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents will be given priority. The Richard Ivey School of Business and The University of Western Ontario are committed to employment equity and welcomes applications from all qualified women and men, including visible minorities, aboriginal people, and persons with disabilities.

554 UNIVERSITY OF MASSACHUSETTS DARTMOUTH Charlton College of Business seeks to fill positions at the Assistant Professor level to teach undergraduate and graduate courses in Accounting, effective September 1, 2009. The Charlton College of Business is accredited by AACSB International and located on the south coast of Massachusetts, convenient to Boston and Providence. For information, visit: http://www.umassd.edu/charlton. Review of applications begins immediately and continues until the positions are filled. Ph.D. or D.B.A. in Accounting or related field, ABDs near completion of doctoral degree will be considered. Professional certification is a plus. Must be able to teach a variety of levels, conduct scholarly research that leads to publication in scholarly journals, and provide service to the university, school, and profession. Contract renewal subject to completion of doctorate by March 1, 2009. Send cover letter, vitae, and statement of teaching and research interests to Dean Eileen Peacock at: epeacock@umassd.edu. Interested candidates will have an opportunity to meet with our representatives at the AAA Annual Meeting in August 2008. The University of Massachusetts Dartmouth is an AA/EEO employer.

556 TEXAS STATE UNIVERSITY-SAN MARCOS seeks to hire two faculty members at the Assistant and Associate Professor level, Fall 2009. Applicants should have terminal degree in related field, able to teach in two areas, preference for one to be tax or audit, conduct research leading to publication, and provide service to the profession and university. More information about the school can be found at: http://www.business.txstate.edu/. See the online job positing and application process at: http://www.txstate.edu/academicaffairs/FacultyEmp/faculty_employment.htm. Direct any questions to Search Committee Chair, Dr. Elaine Eikner at: ee02@txstate.edu. Texas State is an EO/AA Employer.

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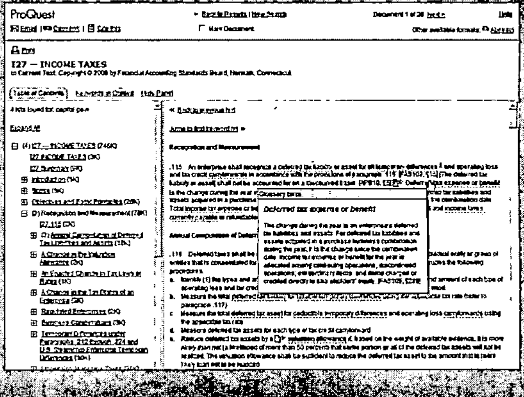

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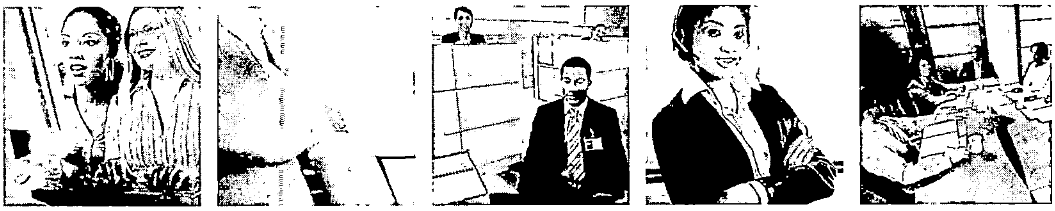

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NANYANG
TECHNOLOGICAL
UNIVERSITY

Nanyang Assistant Professorships

(www.ntu.edu.sg/publicportal/nanyangprof.htm)

Singapore's science and technology university, the Nanyang Technological University, invites outstanding young researchers and exceptional scholars in their fields of science, engineering, social sciences, arts and humanities or business, to apply for appointments as ***Nanyang Assistant Professors.*** Up to 10 appointments will be made.

Successful candidates will receive start-up research grants of up to **S$1 million** and an attractive remuneration package with a competitive salary year and other benefits including assistance with accommodation. They will hold tenure track appointments and play lead roles in the university's new wave of multi-disciplinary, integrative research. They are expected to be within 10 years of gaining their Ph.D and ready for independent leadership of their own research groups. Outstanding applicants in science and engineering are also encouraged to apply for the prestigious Singapore National Research Foundation Fellowships in Science and Technology (see www.nrf.gov.sg, Closing Date 15 September 2008) indicating that the Fellowship will be held at the Nanyang Technological University.

Singapore has in place an exciting, dynamic and well-funded research environment to nurture and attract top R&D talent and the Government has set aside S$13.5 billion over 5 years to develop international R&D. In tandem, Nanyang Technological University is also making unprecedented research investments, emphasizing cutting-edge research and revolutionary technological innovations across multiple disciplines. It has already attracted World-leading researchers to its ranks.

This is a unique opportunity to join one of the fastest-growing research universities and participate in the rapid rise of Asia, in an English-speaking environment at the interface between East and West.

To apply, please download the application form available at our website or send an email to nanyangprof-appform@ntu.edu.sg and submit to:

The Provost (NAP Application)
Nanyang Technological University
Administration Building, Level 5
50 Nanyang Avenue, Singapore 639798
Fax: (65) 6791 9340

or email NanyangProfessorship@ntu.edu.sg

Closing Date: 30 September 2008

www.ntu.edu.sg

Milgard School *of* Business

UNIVERSITY OF
WASHINGTON
TACOMA

FACULTY POSITIONS IN ACCOUNTING

The Milgard School of Business at the University of Washington Tacoma invites applications for two tenure track accounting positions at the assistant professor or associate level beginning September 2009 (Autumn Quarter). All areas of specialization within Accounting will be considered. Applicants must have a Ph.D. in Accounting. The successful candidate will demonstrate commitment to both high-quality research and teaching excellence.

We seek applicants with the ability to successfully teach undergraduate and graduate level courses, produce high quality research, and actively participate in a diverse, evolving university community. Teaching interest could include any or all of the following: financial accounting, managerial accounting, international accounting, assurance, and tax.

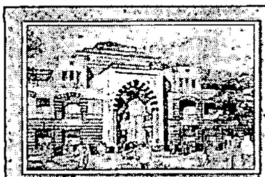
One of three campuses of the University of Washington, UWT is forging its own identity as a metropolitan university that shares the University of Washington's commitment to high quality teaching and research and is committed to participating in the educational, cultural, and economic development of the South Puget Sound. Located largely in renovated buildings in Tacoma's downtown warehouse district, UWT serves a diverse population of South Puget Sound commuter students. In the fall of 2006, UWT admitted its first cohort of freshmen. We are seeking dynamic, talented faculty to join us in building out our existing programs and in adding new ones as we transition from an upper-division undergraduate and graduate institution established in 1990 to a full four-year university. For more information about UWT, see our website at http://www.tacoma.washington.edu.

The Milgard School of Business, named in recognition of a $15 million gift from the Milgard family, enjoys strong relationships with businesses and the South Puget Sound community. The School's new Center for Leadership and Social Responsibility offers opportunities for teaching, research and community outreach related to its mission. The AACSB-accredited Milgard School currently has more than 450 students in its undergraduate and MBA programs. The MBA degree provides emphases in change management and finance, while the baccalaureate degree offers concentrations in accounting, finance, general business, international business, management, and marketing. Additional information about the Milgard School of Business can be found at: http://www.tacoma.washington.edu/business.

To apply, please send a letter of application, a curriculum vita, and evidence of teaching effectiveness. Screening of applications will begin immediately and continue until the position is filled. Candidates who advance beyond initial screening will be asked to provide three letters of reference to complete their application packages. Electronic submission of application materials is encouraged by emailing **msbhires@u.washington.edu** or mail them to:

Milgard School of Business Accounting Faculty Search
University of Washington Tacoma
Campus Box 358420
1900 Commerce Street
Tacoma, WA 98402-3100

The University of Washington is an affirmative action, equal opportunity employer. The University is building a culturally diverse faculty and staff and strongly encourages applications from women, minorities, individuals with disabilities and covered veterans. University of Washington Tacoma faculty engage in teaching, research and service and are expected to participate in the core curriculum.



Better thinkers;
Better futures

Founded in 1919, AUC's campus is currently located in Cairo, Egypt, but will be moving to a new, state-of-the-art campus in New Cairo, beginning Fall Semester 2008. AUC's degree programs are accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools; Engineering programs are accredited by ABET and the Management program is accredited by AACSB. For more information visit our website at www.aucegypt.edu.

The American University in Cairo is an Equal Opportunity and Affirmative Action Employer.

THE AMERICAN UNIVERSITY IN CAIRO

ACCOUNTING (Mgmt-1-09)

The normal teaching load is three courses per semester and English is the language of instruction. For expatriates, benefits include housing, annual round-trip air travel for appointee and qualifying dependents, plus schooling for the equivalent of up to two children at Cairo American College. In view of AUC's protocol agreement with the Egyptian government, which requires specific proportions of Egyptian, U.S., and third-country citizen faculty, at this time preference will be given to qualified applicants who are U.S. citizens.

Job Description:
The Department of Management invites applications for faculty positions in accounting.

Requirements:
Ph.D. is required preferably from an AACSB accredited university. Teaching/Industry experience, professional certification and recent scholarly research and publications preferred. Appointment at all levels, including visiting appointments, will be considered.

Additional Information:
Tenure track position. One- two- or three-year appointments, subject to mutual agreement will begin September 2009. Renewal of an appointment depends upon institutional needs and the appointee's performance.

Application Instructions:
All applicants must submit the following documents via online. a) an updated C.V b) a letter of interest; c) a completed AUC Personal Information Form (PIF). d)List names & contact information of at least three references familiar with your professional background.

For complete details and application information: **http://tinyurl.com/4oagzk**

ASSISTANT PROFESSOR, ACCOUNTING

Rider University's Accounting Department of the College of Business Administration invites applications for a tenure-track position beginning in Fall 2009 at the rank of Assistant Professor. The successful candidate will be able to teach at both the undergraduate and graduate levels and will have a strong commitment to both teaching and research. An earned doctorate in accounting is required; near-term ABDs will be considered. Professional certification is a plus. The Accounting Department has earned Accounting Accreditation from AACSB International. Rider offers both MAcc and MBA degrees. Additional information is available at the department homepage of the Rider website: http:www.rider.edu.

Questions about this position should be directed to Dr. Marge O'Reilly-Allen at oreillyallen@rider.edu. All applicants must complete an online application at www.rider.edu/hr, 'Employment Opportunities'; 'Create Application'; and attach letter of interest, with a curriculum vitae. Undergraduate and graduate transcripts and three letters of recommendation also are required and can be sent separately to: Manager of Employment, Rider University, and 2083 Lawrenceville Road, Lawrenceville, NJ 08648-3099. Please reference position number 101115. Review of applications will begin immediately. AA/EOE

1865
RIDER
UNIVERSITY

PEPPERDINE UNIVERSITY
Graziadio School of Business and Management

Seeking Experienced Assistant or Associate Professor in Accounting

The Graziadio School of Business & Management, Pepperdine University, seeks an experienced assistant or associate professor in Accounting starting Fall 2009. We value teaching excellence, a productive research record, and professional experience.

Candidates must have an earned doctorate in Accounting or be in the final stages of their dissertation. A CPA or CMA is desirable. Research support includes access to WRDS (Wharton Research Data Services) with Compustat and CRSP. The school encourages its faculty to engage in consulting activity.

As an AACSB accredited school, we have a full-time MBA program based on our Malibu campus and a large part-time MBA program. This part-time program is taught in the evenings at five locations throughout the Los Angeles area. The teaching needs are primarily in Financial Accounting and Managerial Accounting. Research interests can lie in any of the traditional areas of Accounting.

Applications should include a cover letter, resume, teaching evaluations, a sample research paper, and unofficial transcripts showing degrees earned. For full consideration, please apply by October 1, 2008. Contact: Dr. Richard Powell, Graziadio School of Business, Pepperdine University, 24255 Pacific Coast Highway, Malibu, CA 90263,(310) 506-4874, rpowell@pepperdine.edu.

Dr. Powell will be interviewing candidates at the Annual Meeting of the American Accounting Association to be held in August 2008 in Anaheim.

EOE